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Food Technology Abstracts

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Compiled and Edited by :

BSN - B S Narahari Rao
KMD - K M Dastur
KAR - K A Ranganath
MVG - M V Gopinath
SVS - S V Sangameswaran
BV - B Vasu

National Information Centre for Food Science and Technology
Central Food Technological Research Institute, Mysore-570013
India.

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PLEASE CONTACT:

Head, Food Science & Technology Information Service (FOSTIS), CFTRI, Mysore - 570 013, India.

GENERAL

519 ANON. The importance of chemical food control in safeguarding the population. *Dtsch. Lebensmittel-Rundschau.* 76(3); 1980; 82-4

520 BOSCH (G). Food law for foodstuffs based on grain. *Getreide-Mehl Brot.* 33(9); 1979; 246-9 (German)

521 BOSE (AN). Meeting the food requirements in 2000 AD. *Sci. Cult.* 46(5); 1980; 182-5

Requirements of qualitative and quantitative food production and their conservation by appropriate post harvest technology to meet the projected demands of Indian people are considered. MVG

522 COX (DF). Design and analysis in nutritional and physiological experimentation. *J. Dairy Sci.* 63(2); 1980; 313-21

523 DRAWERT (F). Food Technology: a problem of development. *Chem. Mikrobiol. Technol. Lebensm.* 6(4); 1980; 97-8 (German)

The author has outlined some of the problems that food technology will have to solve in the forseeable future. KMD

524 SPERLICH (H). 100 years of chemical food control in Karlsruhe. *Dtsch. Lebensmittel-Rundschau.* 76(3); 1980; 86-91

525 ZIPFEL (W). 100 years of foodstuff legislation. *Dtsch. Lebensmittel-Rundschau.* 76(3); 1980; 84-6

FOOD PROCESSING AND PACKAGING

PROCESSING

526 WYSS (E). New developments in cleaning of seed grain. *Getreide-Mehl Brot* 33(10); 1979; 253-6 (German)

527 VORWERCK (K). Trends in grain drying. *Getreide-Mehl Brot.* 33(9); 1979; 231-5 (German)

528 FORNELL (A), BIMBENET (JJ) and ALMIN (Y). Experimental study and modelization for air drying of vegetable products. *Food Sci. + Technol.* 13(2); 1980; 96-100

This paper presents a method by which a few laboratory drying experiments make possible for certain products, the prediction of drying rates for various conditions of the ambient air and therefore, the design of an industrial dryer for the same product. The products studied were diced apples, carrots, potatoes, and sugar beets. It was found that a characteristic curve is valid for certain products over a wide range of air characteristics. An example of comparison between calculated and measured drying rates is given for the case of a thick layer and of superposed thin layers. KMD

PACKAGING

529 DAY (FT). The choice and application of wrapping papers. *Confect. Prod.* 46(4): 1980; 188-9

Part No. 1 of the article discusses : paper maker and the converter; matching a package sample; greater use of films; bags and pouches; from opaque to transparent; and functional properties of papers. BSN

530 MAHADEVIAH (M), GOWRAMMA (RV), NARESH (R) and ANANDASWAMY (B). Correlation of physico-chemical characteristics of indigenous electrolytic tinplate with the shelf-life of the fruit and vegetable products canned in it. *Indian Food Packer.* 34(4); 1980; 25-38

Four types of cans fabricated from 4 batches of indigenous (Rourkela, India) electrolytic tin plate were investigated for their physico-chemical (grain structure of tin coating, thickness of tin coating; free tin and alloy layer, porosity by thiocyanate test and iron solution value) and electro-chemical characteristics by polarisation value and model studies and by studies on shelf life of a few canned fruit and vegetable products (pineapple slices in sugar syrup, pineapple juice, mango juice, papaya slices in sugar syrup, potatoes in brine, beans in brine, ivy gourd (Kundri) in brine). From the data given in tables and graphs. it has been found that no significant differences could be observed among the four batches of tin plates for their suitability for canning fruit and vegetable products as assessed by their physico-chemical characteristics, electro-chemical behaviour and shelf-life studies. BSN

531 NARESH (R), MAHADEVIAH (M), GOWRAMMA (RV) and ANANDASWAMY (B). Chromium coated steel plate as an alternative to tinplate for canning food products. *J. Food Sci. Technol.* (India) 17(6); 1980; 283-6

Aspects considered in the review are: manufacture of tin-free steel (TFS); can fabrication; properties of TFS; performance test done with TFS cans suitability of TFS cans for different products; and economics of TFS cans. KAR

FOOD ENGINEERING AND EQUIPMENT

532 NISHINARI (K), HORIUCHI (H), ISHIDA (K), IKEDA (K), DATE (M) and FUKADA (E). A new apparatus for rapid and easy measurement of dynamic viscoelasticity for gel-like foods. *J. Jpn. Soc. Food Sci. Technol.* 27(5); 1980; 227-33 (Japanese)

A description of a new apparatus for the measurement of viscoelasticity of gel-like foods was given. Complex Young's modulus $E' = E' + iE''$ of gels can be obtained easily and rapidly by means of this apparatus. E' and E" of agar-agar and gelatin gels were determined for various concentrations. E' of these gels were proportional approximately to the square of the concentration. The values of the mechanical loss tangent of gelatin gels were larger than those of agar-agar gels. Temperature dependence of E' and E" of gelatin gels were also examined. Force-deformation curves were obtained for these gels in the case of uniaxial compression with a constant speed. The breaking strength of gelatin gels was much larger than that of agar-agar gels. It was very difficult to obtain force-deformation curves for gelatin gels with good reproducibility. The breaking process of gelatin gels was recorded photographically at regular time intervals. It was concluded that the dynamic measurement in the range of small deformation is an appropriate method for evaluating the quality of gel-like foods. AA

533 POPMA (F). Report on an one season test run of a new automatic packpress prototype. *Flussiges obst.* 46(1); 1979; 15-6 (German)

534 TEINDREISCHER (R). The sorting of different bottle cases. *Flussiges obst.* 46(3): 1979: 93-4 (German)

FOOD CHEMISTRY AND ANALYSIS

535 BEUTLER (HO) and BEINSTINGL (G). Determination of L-ascorbic acid in foodstuffs. *Dtsch. Lebensmittel-Rundschau.* 76(3); 1980; 69-75

An improved method for determining L-ascorbic acid is described. It is based on the specific oxidation of ascorbic acid by methyl-thiazdyl-tetrazozolium salt (MIT), in which formazane, which can be measured at 578 nm, is formed. The specificity is improved by performing the test at pH 3.5 and by using a special enzyme of ascorbate oxidase (AAO) from *Cucurbita* spp. Good precision and accuracy of measurement are obtained by carefully optimizing the test conditions. It is possible to develop a test combination with a favourable composition of the reaction compounds, by which ascorbic acid can be determined quickly with simple manipulation. The determination of ascorbic acid in fruit juices, wine and meat products is explained. KMD

536 CHEN (ACC) and KARMAS (E). Solute activity effect on water activity. *Food Sci + Technol.* 13(2); 1980; 101-4

The effect of solute activity on water activity was studied, using an electric hygrometer. Of all the compounds tested, glycine, lactic acid, and sodium chloride had the lowest water activity and water activity coefficients. Formulations using these compounds may be considered as potential water activity depressants for IMF. AA

537 DOKLADALOVA (J) and UPTON (RP). Instrumental evaluations of readily carbonizable substances in citric acid. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 962-5

538 HILDRUM (KI). Effects of pH and sodium chloride concentration on the reaction between nitrite and sulfanilic acid/N-(Naphthyl) ethylenediamine. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 956-8

539 JENNINGS (WG) and ALVES (S). Photoionization detection in a high resolution glass capillary system. *Chem. Mikrobiol. Technol. Lebensm.* 6(4); 1980; 124-8

Photoionization detection (PID) with small-bore, high-resolution, glass capillary columns is a non-destructive technique that permits collection of highly resolved fractions for sensory evaluation or for further chemical characterization, or for tests of biological activity. KMD

540 PIFFERI (PG) and VACCARI (A). Purification of anthocyanins of traces of metals by ion-exchange resin. *Food Sci.+ Technol.* 13(2); 1980; 85-6

A method is described for the purification of anthocyanin solutions of traces of Al^{3+} by adsorption on acid alumina and subsequent elution with acidified methanol using Dowex 50 W X-2 50-100 mesh cationic resin. This method can also be used to purify anthocyanin solutions of traces of other metal ions, such as Fe^{3+}. AA

541 SAARIVIRTA (M) and KREULA (M). The contents of water insoluble dietary fibre in Finnish berries and mushrooms. A preliminary study. *Z. Lebensmittel-unters. Forsch.* 169; 1979; 88-9

The contents of water insoluble dietary fibre were estimated in Finnish berries and mushrooms. The contents in berries varied from 8.9 to 26.6% and in mushrooms from 19.6 to 41.6% in dry matter. AA

542 STIJVE (T). The determination of bromopropylate residues. *Dtsch. Lebensmittel-Rundschau.* 76(4); 1980; 119-22

A simple extraction-solvent partition - Fiorisil clean-up method is used to determine bromopropylate residues in several substracts. A detailed description of the method is presented in this paper. Recoveries of bromopropylate added to various substracts ranged from 73-102%. KMD

543 WALSH (JH), WYSE (BW) and HANSEN (RG). A comparison of microbiological and radioimmunoassay methods for the determination of pantothenic acid in foods. *J. Food Biochem.* 3(4); 1980; 175-89

Seventy five foods were analysed for their pantothenic acid content by using a microbiological assay and a new radio immunoassay (RIA) technique. Between the results of the two methods very high correlation ($r^2 = 94$) was observed. A statistically significant difference ($p = 0.05$) between two assay results for all foods and subgroups, meats, breads, cereals, fruits and vegetables was observed. At $p = 0.01$, significant differences between data obtained for the two methods was not observed for breads, cereals, fruits and vegetables. In general, microbiological assay method gave a higher mean value for all the seventy five foods as compared to RIA method. However, RIA has been found to be a convenient method for assay of pantothenic acid in fruits and vegetables and breads and cereals. BSN

544 WALTERS (CL), HART (RJ) and PERSE (S). Determination of nitrate at low level without prior extraction and its differentiation from nitrite. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 1-3

A reagent containing titanous chloride and hydrogen bromide has been developed that converts nitrate to a form, presumably, nitrite, releasing nitric oxide on acidification. Thus the addition of the reagent to a food or other dried matrix containing nitrate leads to the evolution of nitric oxide, which can be determined using a chemiluminescence analyzer. Any nitrite present on the matrix can be differentiated from nitrate by the nitric oxide released by employing acetic acid prior to the addition of titanous chloride reagent. The coefficients of variation for the nitric oxide responses from 1.0 µg and 10 µg of potassium nitrate were 12 and 9.2% respectively. At a level of 10 µg of KNO_3, 97.8 ± 4.2% of nitric oxide expected from an equivalent amount of nitrite was obtained from nitrate following reduction with the titanous chloride reagent. Ascorbic acid did not interfere with the determination of nitrate in this manner, but a similar nitric oxide response was obtained from N-nitrodimethylamine. AA

FOOD MICROBIOLOGY

545 BERETTA (MG), POTENZA (D), SCOLASTICO (C), MANACHINI (PL) and ZENNARO (E). RNA base or whole cell nucleotide composition of yeast. *Food Sci. + Technol.* 13(2); 1980; 82-4

546 BRODSKY (MH), CIEBIN (BW) and SCHIEMANN (DA). A critical evaluation of automatic bacterial colony counters. *J. Food Prot.* 42(2); 1979; 138-43

547 GILLILAND (SE). Beneficial interrelationships between certain microorganisms and humans: Candidate microorganisms for use as dietary adjuncts. *J. Food Prot.* 42(2); 1979; 164-7

548 HENSLEY (DE), SMILEY (KL), BOUNDY (JA) and LAGODA (AA). Beta-amylase production by *Bacillus polymyxa* on a corn steep-starch-salts medium. *Appl. Environ. Microbiol.* 39(3); 1980; 678-80

549 HOCKING (AD) and PITT (JI). Dichloranglycerol medium for enumeration of xerophilic fungi from low-moisture foods. *Appl. Environ. Microbiol.* 39(3); 1980; 488-92

A low water activity (a_w) medium (0.95 a_w) containing 18% (wt/wt) glycerol and 2 µg of dichloran per ml was developed for enumerating the fungal flora of dried and semidried foods. The medium, designated DG18, was shown to be significantly better than Christensen malt salt agar when both media were tested with foodstuffs and with pure culture inocula. The need for a medium of reduced a_w for enumerating xerophilic fungi from low-moisture foods was demonstrated by comparing fungal counts obtained on both high-a_w and low-a_w media. AA

550 KAVANAGH (F) and RAGHEB (HS). Microbiological assays for antibiotics and vitamins: considerations for assuring accuracy. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 943-50

551 RESTAINO (L), GRAUMAN (GS), McCALL (WA) and HILL (WM). Evaluation of the minitek and API 20E systems for identification of *Yersinia enterocolitica*. *J. Food Prot.* 42(2); 1979; 120-3, 125

552 SALIB (AG), FRAPPIER (F), GUILLERM (G) and MARQUET (A). Regulation of biotin biosynthesis in *Escherchia coli*. *Chem. Mikrobiol. Technol. Lebensm.* 6(4); 1980; 99-102

553 SMITH (TL) and WITTER (LD). Evaluation of inhibitors for rapid enumeration of psychrotrophic bacteria. *J. Food Prot.* 42(2); 1979; 158-60

FOOD ADDITIVES

554 BIRKEL (TJ), WARNER (CR) and FAZIO (T). Gas chromatographic determination of 1,4-Dioxane in polysorbate 60 and polysorbate 80. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 931-6

555 SWEETMAKER. Flavours and colours. *Confect. Prod.* 46(4); 1980; 172-3, 189

556 ZYGMUNT (LC). Gas-liquid chromatographic determination of sorbic acid and sodium benzoate in table syrup. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 939-42

CEREALS

557 BOLLING (H). Application of NIR techniques in cereal analysis. *Getreide-Mehl Brot.* 33(10); 1979; 264-8 (German)

It can be established that with the help of NIR technology a control instrument can be made available in grain processing industry. This instrument seems to fulfill the ever increasing requirements with regard to uniform product quality. The determination of protein in wheat with the help of NIR has found a wide application in USA and Canada especially in commerce. Its application in the fields of milling and bakery technology is of interest. KMD

558 JAHN-DEESBACH (W), SCHWENDER (E), STENSCHKE (G) and ZEPPERNICK (B). New investigations of vitamin B1 content in grain. *Getreide-Mehl Brot.* 33(10); 1979; 256-64 (German)

Results of examinations of the thiamine content in barley, wheat, oats and rye are given. The examination of assortments 80 summer barleys, 200 Aestivum summer wheats, 90 Durum summer wheats, 45 Oats shows clear genotype differences in the thiamine content of the individual types of grains. The reaction of chosen genotypes in thiamine content on additional nitrogen fertiliser was variable in pot experiments. Wheats too showed clear differences in thiamine content. Additional exposure to light in the range of short-wave, blue and ultraviolet during the phase of grain formation led to various reactions in thiamine content depending on the nitrogen supply. Investigation on the thiamine concentration and thiamine deposition in winter wheat and winter rye during the grain formation phase (16 periodic crops from the stage blossom to full ripeness) showed that the thiamine concentration in the dry grain mass decreases but at the same time there is an increase in quantity of thiamine per grain. Depending on the deposition of starches, proteins, pentosans, celluloses on one hand and thiamine on the other, the thiamine content of the same genotype can vary. Place, weather, fertiliser, storage and other factors can modify the thiamine concentration in dry grain mass. KMD

559 LAMPMAN (HH). Gaining public acceptance of cereal foods through nutrition research and education. *Getreide-Mehl Brot.* 33(9); 1979; 251-2 (German)

Suggestions for an appropriate nutrition education for consuming bread are given as in the case of potatoes, milk products and cereals, which resulted in any increase in their consumption. An increasing bread consumption in the case of wheat bread cannot be achieved, since these types of bread do not have special characteristics externally. On the contrary an effective action is possible for different special breads with special nutritive value or special taste. The results of nutrition research must be introduced in nutrition education. Then it will be possible even in the case of bread, not only to stabilise the consumption of bread, using special breads, but also to increase the consumption. KMD

560 MILLER (BS). A feasibility study on use of Near Infrared (NIR) techniques in examination and characterization of cereal grains and cereal products. *Getreide-Mehl Brot.* 33(9); 1979; 249-51

The use of Near Infrared (NIR) reflection measurement for the characterisation of cereal grains and cereal products is drawing worldwide attention. The determination of protein, moisture and fat is of particular interest. Other possibilities of using such equipments are also studied. KMD

561 SCHAPER (F). Films and machinery for packing of cereal based food with gas protection. *Getreide-Mehl Brot.* 33(10); 1979; 278-80 (German)

562 STOLZE (P). Fundamentals of preservation under a protective, gas for packaging of cereal based food. *Getreide-Mehl Brot.* 33(10); 1979; 277-8 (German)

This paper deals with the gas preservation and packaging of cereal foodstuffs. The main advantage of CO_2 and N_2 is that they keep off oxygen so that oxidation is either eliminated or delayed. KMD

RICE

563 PILLAIYAR (P). Problems facing rice bran oil extraction in India. *Oil Oilseeds J.* 32(4); 1980; 16-8

About 100 solvent extraction plants that extract rice bran in India are working to only 30% of their total installed capacity (which is 1.55 million ton of bran/year) because of non-availability of a sufficient quantity of rice bran of adequate quality. The author believes that the requisite amount of good rice bran can be produced by (a) fitting proper precleaners and paddy separators to existing rice mills, and (b) by installing suitable stabilizers for producing low free fatty acids rice bran oil. The problems experienced in pelletizing parboiled rice bran, and in refining of rice bran oil have been solved. KMD

WHEAT

564 IENGAR (NGC), RAJENDRAN (G), MOHAMED YUSUFF (K) and SUBRAHMANYAN (V). Application of pressure parboiling process for the production of bulgur wheat. *J. Food Sci. Technol.* (India). 17(6); 1980; 263-5

Pressure parboiling technique developed for paddy has been used for producing bulgur wheat. Wheat is first cleaned by circulating water and then steamed at 12.5 kg/cm^2 pressure for 10 min in the vessel developed for the purpose and further open steamed for 10-15 min. and maintaining the pressure at 1.4 kg/cm^2 for 20-25 min. Wheat is then dried to 12.5-14.0% moisture and polished with 5% rice husk in a rice huller and milled. Cost of bulgarizing including drying of 1 ton of wheat is Rs. 24.72. Maximum time needed for bulgarization is 55-60 minutes. The bulgur wheat contained 10.70-13.60% moisture, 1.23-1.90% crude fibre and 11.62-12.52% protein. KAR

565 KUMAR (GV), EMILIA VERGHESE (T), HARIDAS RAO (P) and SHURPALEKAR (SR). Effect of heat treatment on the nutritive value of wheat germ. *J. Food Sci. Technol.* (India) 17(6); 1980; 256-8

Unprocessed wheat germ was (i) toasted at 150 C for 20 minutes, (ii) steamed for 10 minutes, (iii) a blend of wheat germ and groundnut flour (80: 20) was dried in a double drum drier at 35 psig steam pressure and 3 rev/minutes of drum speed. Protein efficiency ratio (PER) of these were determined at 85% purity and 10% protein level with rats. The PER of (ii) was 2.84, which was significantly higher than that of (i) and (iii) which were 2.64 and 2.55 respectively. The available lysine (g/100 g protein) of the proteins of raw, (i), (ii) and (iii) were 5.71, 5.17, 5.61 and 5.40 respectively. In (ii) and (iii) a drastic reduction in extractability of protein in 5% potassium sulphate solution and a total destruction of trypsin inhibitor was observed. KAR

566 LEE (YW) and WESTCOTT (ND). Quantitative confirmation of dimethoate residues in wheat plants by single ion mass spectrometry. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 782-5

567 RAO (VS) and VAKIL (UK). Improvement of baking quality of oilseed-enriched wheat flour by addition of gluten and soyalecithin. *J. Food Sci. Technol.* (India) 17(6); 1980; 259-62

Defatted (i) soy and (ii) peanut flours were added to wheat flour at 5, and 10% levels with and without gluten and soyalecithin and the bread making property and the bread quality were assessed. Water absorption capacity of flour increased with (i) and (ii); dough development time increased with (i) but not with (ii); there was no significant difference in dough consistency or stability due to (i) and (ii). Addition of (i) and (ii) weakened the dough, however addition of 1.1% gluten to 10% of (i) and (ii) improved the strength of the dough. Bread prepared by adding (i) and (ii) had smaller loaf volume and lower preference by taste panel. Addition of 1.1% gluten partially corrected some of the rheological and baking defects but acceptability of the bread and low. Addition of 0.5% soyalecithin improved sensory characteristics and acceptability of breads supplemented even with 15% of (i) and (ii). KAR

OAT

568 BIERMANN (U) and GROSCH (W). Bitter-tasting monoglycerides from stored oat flour. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 22-6

From stored ground oat grains with bitter tastes a mixture containing 9-hydroxy-trans, cis-10, 12-octadecadienoil-1-monoglyceride and 13-hydroxy-cis, trans-9-11-octadecadisnoic-1-monoglyceride were isolated. The threshold for bitter taste of the monoglycerides (1,1-2.2 μmol/ml) is lower than that of the free 13-hydroxy-cis, trans-9-11-octadecadienoic acid (7.6-8.5 μmol/ml). The corresponding 13-hydroperoxy linoleic acid is not bitter. AA

RYE

569 GEIGER (HH) and MORGENSTERN (K). Status of hybrid-breeding in rye. *Getreide Mehl Brot.* 33(9); 1979; 225-31 (German)

BARLEY

570 BUREAU (D) and Mac GREGOR (AW). Evaluation of the neocuproine colouring method for the determination of reducing sugars. (Application for the determination of the activity of barley β-amylase) *Food Sci. + Technol.* 13(2); 1980; 92-5 (French)

This colorimetric method of estimating reducing sugars permits rapid estimation of β-amylasic activity, even in the presence of a reducing agent within the concentration limits used in the experiment. It is, moreover a sensitive method that permits measurement of a low degree of activity. Finally, it is reproducible if care is taken to follow the procedure exactly-viz.. simultaneous boiling of all the tubes, reading of the spectrophotometer against correctly chosen controls. KMD

MILLETS

MAIZE

571 GERSTENKORN (P). Processing quality of German maize. *Getreide-Mehl Brot.* 33(9); 1979; 236-40 (German)

The processing qualities of German maize with reference to dry grinding were studied. The quality spectrum was in the range of 210 to 290 FAO. A large variability resulted in grit yield. The yield got reduced with increasing FAO value. Contrary to the natural drying in flasks, the artificial drying of maize seems to improve the grinding ability, however only under special drying conditions, which correspond to the state of harvest material. KMD

PULSES

PEA

572 GUEGUEN (J), QUEMENER (B) and VALDEBOUZE (P). Elimination of the anti-nutritional factors of the faba bean (*Vicia faba* L) and pea (*Pisum sativum* L) during preparation of protein isolates. *Food Sci + Technol.* 13(2); 1980; 72-7 (French)

The conditions for the elimination of antitrypsic and haemagglutinating factors during the preparation of protein isolates from faba beans (*Vicia faba* L) and field peas (*Pisum sativum* L), by isoelectric precipitation or ultracentrifugation have been investigated. When ultrafiltration is employed, the α-galactosides are removed from the aqueous alkaline extract and concentrated in the ultrafiltrate. When isoelectric precipitation is employed, these oligosaccharides remain in solution and are eliminated in the supernatant. In both cases, the remaining part is removed from the protein isolate by the washing water. However, about one-third of the antitrypsic and haemagglutinating activity of the meat remains in the isolates. This quantity can be reduced still further by washing or by ultrafiltration; but the final residues that remain are 2.5 T.U.I./mg dry matter and 6.13 units of haemagglutinins/mg in the faba bean isolate; and 6 T.U.I./mg dry matter and 40-100 units haemagglutinins/mg d.m. in the field pea isolate. KMD

OILSEEDS AND NUTS

573 ANON. Strategy to develop oilseeds. *Oils Oilseeds J.* 33(3); 1980; 28

CASSAVA

574 PRASADA RAO (R), AZEEMODDIN (G), ATCHYUTA RAMAYYA (D), THIRUMALA RAO (SD), SITA DEVI (K), PANTULU (AJ), LAKSHMINARAYANA (G),PILLAIYAR (P), BALASUBRAMANIAN (A) and KRISHNAMOORTHY (K). Characteristics and composition of Indian cassava seed and oil. *J. Food Sci. Technol.* (India) 17(6); 1980;266-7

A local variety of cassava (*Manihot esculenta* Crantz) seed on analysis gave 26% orange-yellow oil and 18.5% protein. The oil has iodine value 115, unsaponifiable matter 1.0%, and refractive index (at 40 C) 1.465, GLC showed

the following fatty acid composition (wt %): 8:0, 0.5; 10:0, 0.8; 12:0, 4.6; 14:0, 1.5; 16.0, 11:4; 18:0, 4.6; 18:1, 25.1 and 18:2, 51.4. KAR

GROUND NUT

575 DOKU (EV), HAMMONDS (TW) AND FRANCIS (BJ). On the composition of Ghanaian bambara groundnuts (*Voandzeia subterranea* (L) Thours. *Trop. Sci.* 20(4); 1978; 263-9

The bambara groundnut is a grain legume that ranks next to cowpeas and groundnuts as a cultivated legume crop south of the Sahara. Proximate composition of six Ghanaian cultivars was as follows: moisture 11.3-12.4%; fat 5.7-6.4%; crude protein (N x 6.25) 16.3-19.0%; ash 3.1-3.3%; and carbohydrates 35.7-45.2%. The fatty acid composition of the fat was palmitic acid 18-22%, stearic acid 7-9%, oleic acid 18-24%; linoleic acid 35-39%; linolenic and arachidic acids 3% each; behenic acid 5-7%; and lignoceric acid 2%. The oil resembles soya bean oil in composition. The amino acid composition of the protein is like that of other grain legumes, being high in lysine (6.63-6.97 g/16 gN) and low in the sulphur containing aminoacids (Cystine + methionine 2.61-2.92 g/16 gN). KMD

576 NARASIMHACHAR (BL), ATCHYUTA RAMAYYA (D), AZEEMODDIN (G) and THIRUMALA RAO (SD). Pilot plant studies on processing of groundnuts. IX. Drying and milling of high moisture groundnuts. *Oils. Oilseeds J.* 32(4); 1980; 19-22

The low-cost, hand-operated, rotary dryer for accelerated drying of freshly harvestd groundnut pods, having 25% moisture content, has been described. Groundnut kernels with 7-18% moisture were milled, with proper control of variables, and their parameters determined; normal yields of oil were obtained under conventional oil-mill conditions. (See Oils Oilseeds J. 26(8); 1974; 9-10 for part VIII). KMD

SOYABEAN

577 ROBBINS (RA) and BRANEN (AL). Soybean phosphatides and blood lipids of primates. *J. Food Prot.* 42(2); 1979; 113-9

SUNFLOWER

578 BALASUBRAHMANYAM (N) and KOLTE (SJ). Effect of alternaria blight on yield components, oil content and seed quality of sunflower. *Indian J. Agric. Sci.* 50(9); 1980; 701-6

Seeds from the blight affected sunflower plants contained significantly less oil than the healthy plants. Oil content and loss varied with var: EC 68415 var. showed max. oil yield and min. loss. MVG

BETEL NUT

579 MUJUMDAR (AM), KAPADI (AH) and PENDSE (GS). Chemistry and pharmacology of betel nut *Areca catechu* Linn. *J. Plant. Crops.* 7(2): 1979: 69-92

Review discusses : early studies; chemical aspects (alkaloids, fats and fatty acids, tannins, lignins, miscellaneous components), pharmacological studies (arecoline, parasymathetic action, cardiovascular activity, urine and electrolyte excretion, ocular effects, central nervous system and other related aspects); and other alkaloids (arecaidine, guvacotine, tannin). BSN

TUBERS AND VEGETABLES

80 LEHNARD (A). The amount of L-dehydroascorbic acid on total vitamin C of vegetable products. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 82-7 (German)

Spectrophotometric determinations of vitamin C were carried out on different kinds of vegetable products in raw state, after steam cooking and freeze drying. Indicators used were in part 2,6-dichlorophenol-idophenol (DIP) and in part N-bromosuccinimide (NBS) and starch iodide, which at the same time allows determination of other reducing and interfering a substances. The amount of L-dehydroascorbic acid (DAS), which together with L-ascorbic acid (AS) becomes vitamin C or total vitamin C (VS), was of special interest. A high proportion of interfering substances especially when estimating VC was considered the cause for the normally measured amount of DAS. In freeze dried samples of vegetable prodcuts, a small amount of DAS could be identified depending on the freezing process AA

RADISH

581 MANABE (T). Studies on the firming mechanism of Japanese radish root by pre-heating treatment. *J. Jpn. Soc. Food Sci. Technol.* 27(5); 1980; 234-9 (Japanese)

The Japanese radish roots subjected to pre-heating treatment prior to boiling process in water were harder than the corresponding untreated control. A maximal hardening was obtained at 55 C for about 2 hours and this temperature was identical with the optimum temperature of pectinesterase (PE) contained in Japanese radish. The degree of esterification of the pectic substances was found to decrease greatly during this pre-heating treatment. Of the total pectic substances, the water soluble fraction decreased while the hot water soluble and hydrochloric acid souble fractions increased in hardened tissues, compared with the untreated ones. A large amount of potassium ion leaked out into the soaking water from the tissues during pre-heating treatment at more than 50 C. On the other hand, amounts of leaked calcium and magnesium ions were relatively small. It was suggested that pre-heating treatment caused potassium ion migration prior to activation of the PE which was inactive in an intact tissue, and the activated PE promoted demethylation of the pectic substances in the tissue to cause hardening by combination of the resulted free carboxyl groups in the pectic substances and divalent cations in the tissue. AA

ALFALFA

582 GURUMUKH SINGH and NARENDRA SINGH. Fractionation of leaf proteins of lucerne (*Medicago sativa*) under low pH-low temperature treatment. *J. Food Sci. Technol.* (India) 17(6); 1980; 280-1

Leaf proteins were fractionated from a lucerne extract by adjustment of pH to 5.5 and keeping for 2 hour at 4 C, followed by centrifugation. About 38% protein and 4% chlorophylls of the extract were recovered in the supernatant fluid. Dark green chloroplastic leaf protein concentrate (LPC) contained 55-65% protein whereas pale green cytoplasmic LPC had 80-85% protein. AA

FRUITS

583 DONER (LW), CHIA (D) and WHITE (JW) Jr. Mass spectrometric $^{13}C/^{12}C$ determinations to distinguish honey and C_3 plant sirups from C_4 plant sirups (Sugarcane and corn) in candied pineapple and papaya. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 928-30

584 JOGINDER SINGH and COCHRANE (WP). Confirmation of organothiophosphorus insecticide residues in fruit and vegetables by oxidative derivatization. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 751-6

585 MAIER (HG), ABIDIN (I) and NGUYEN-THI (H). Esters of sugars and fruit acids in foods of high sugar content. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 36 (German)

Five acid esters, consisting of sugars and fruit acids have been detected in fresh and dried fruits, fruit juices, concentrates, wine and honey. The contents of bound sugars lie between 8 and 2540 mg/1. In apples a positive correlation to the total acid content was observed. On dilution of the concentrate the hydrolysis took place slowly. AA

586 MORTON (SG), EADIE (T) and LLEWELLYN (GC). Aflatoxigenic potentials of dried figs, apricots, pineapples and raisins. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 958-62

587 Van Der MEER (MA). A relative worth factor for the evaluation of the vitamin and mineral content of fresh fruits. *Voeding* 40(12); 1979; 422-5 (Swedish)

The worth factor for vitamins and minerals in fruits; RW (V+M), has been worked out as :

$$RW(V+M) = \left(\frac{\text{mg vit.C}}{23} + \frac{\mu\text{g vit.B}_6}{87} + \frac{\mu\text{g carotene}}{908} + \frac{\mu\text{g vit.B}_1}{194} + \frac{\mu\text{g vit.B}_2}{118} + \frac{\text{mg potassium}}{564} + \frac{\text{mg iron}}{1.8} + \frac{\text{mg calcium}}{59} \right) 28.57\%$$

It can be split into two parts RWV and RWM representing the factors for vitamins and minerals separately. The numerators of the terms represent the content of the nutrient in 100 g fresh material. The content of nutrients in fresh material supplying 100 k cal (418 kJ) of energy may also be used in the formula; in such a case the factor is denoted as RW (V+M)*. Citrus fruits, false fruits, and aggregate fruits have values for RW(V+M) and RW (V+M)* above the averaged fruit (=100%), while pome fruits have much lower values. Exotic fruits have notably greater vitamin contents than native (i.e. Dutch) fruits, but are slightly lower in mineral content. KMD

GRAPE

588 BOULTON (R). A hypothesis for the presence, activity and role of potassium hydrogen, adenosine triphosphatases in grapevines. *Am. J. Enol. Vitic.* 31(3); 1980; 283-7

589 JENSEN (F), CHRISTENSEN (JP), ANDRIS (H), SWANSON (F), LEAVITT (G) and PEACOCK (WL). The effects of ethephon on thompson seedless grapes and raisins. *Am. J. Enol. Vitic.* 31(3); 1980; 257-60

BANANA

590 AEGERTER (P) and DUNLAP (C). Culture of five commonly used acid-producing bacteria on banana pulp. *Appl. Environ. Microbiol.* 39(5); 1980; 937-42

The pH of puree of ripe banana was reduced from 4.8 to about 3.5 to 3.6 in 7 days at 37 C by *Lactobacillus bulgaricus*, *Streptococcus thermophilus* and *Streptococcus faecalis*. However, *Lactobacillus fermentum* (formerly *Lactobacillus fermenti*) and *Leuconostoc mesenteroides* showed active gas evolution and a significant decrease in pH. Gas evolution was twice as much in ripe banana medium as compared to green banana. Fermented banana purees were spongy and showed soft solids and were floating in a clear liquid. They had pleasant odour and showed medium to light creamy brown colour. During a one-month storage purees retained good appearance and aroma. BSN

CITRUS

591 OKADA (M), OHTA (T) and EBINE (H). Selection of yeast strains and culture conditions for cell production from press juice of citrus waste peels. *J. Jpn. Soc. Food Sci. Technol.* 27(5); 1980; 213-20

Utilization of press juice of citrus waste peels for single-cell protein (SCP) production was studied. At first, the composition of medium for screening of yeast strains was determined. It was found that nitrogen compounds and phosphates were necessary to supplement when the press juice was utilized as the medium. Minerals and vitamins had no effects. The growth of one hundred and twenty-five strains were tested on screening media. The protein content of strains which showed high growth yield were also determined. Accordingly, three strains, *Candida* sp. (MMC 5A), *Candida* sp. (OIPC-1A) and *Saccharomyces cerevisiae* No. 79, were selected for further investigations. The best yield and the highest crude protein content were obtained on the medium whose composition was as follows: dry matter (originating from citrus peel juice): urea : KH_2PO_4 = 50 : 5 : 1. The growth of cells was 35g/l, which corresponded to the yield of 50% to total sugars (or the yield of 35% to dry matter), and the crude protein content of cells was around 45%. AA

ORANGE

592 LAUL (MS), BHALE RAO (SD) and MULMULEY (GV). Studies on control of sour rot in Nagpur oranges (*Citrus reticulata* Blanco). *J. Food Sci. Technol.* (India) 17(6); 1980; 278-80

In Nagpur, Mandarin oranges (*Citrus reticulata* Blanco) sour rot causes more than 60% wastage. Calixin (1000 ppm) and Benlate - 50(0.1%) with and without wax emulsion was tried on these oranges packed in ventilated wooden cases provided with cushioning pads. Calixin at 1000 ppm and Benlate-50 at 0.1% in 5% wax emulsion lowered the spoilage from 63 to 6% in Ambia Bahar (October-January) crop during 20 days storage period. For Mrig Bahar (February-May), crop when oranges were dipped for 2 minutes in Calixin of 1000, 3000 and 5000 ppm concentration along with 0.1% Benlate-50, the wastage was reduced to 1.33% and the fruits remained marketable upto 21 days of storage. Besides sour rot the spoilage caused by other organisms have also been listed and the extent of loss incurred after treating with Calixin

(1000 ppm) and Benlate-50 (0.1%) separately have been given. KAR

MANGO

593 KHEDKAR (DM) and SUSANTHA ROY(K). Histological evidence for the reconstitutional property of dried dehydrated raw mango slices. *J. Food Sci. Technol.* (India) 17(6); 1980; 276-7

Reconstitution property of raw mango slices dried in sun and in cabinet drier was studied in relation to their cell structure. Higher reconstitution ratio was noted in mangoes dried in cabinet drier. This was due to less rupture of cells during drying. Dehydrated mango slices in general had thinner and less continuous cell walls than the fresh raw mango slices. KAR

594 MAJUMDAR (G) and MODI (VV). Spoilage of mango by *Aspergillus flavus*. *Curr. Sci.* 49(21); 1980; 821-2

The degree of infection of mangoes by *Aspergillus flavus* was studied by injecting with the spore suspension of the mold (10^8 spores) and determining the blackening of the skin and softening of the tissue. In unripe mango, the fungi exhibited mild infection after 6 days. In partly ripe mangoes, black spot formation was observed in 3-5 days. The susceptibility to infection was increased with the ripening of the fruit. The black spot formation was accompanied by higher levels of citric acid, total acidity and sucrose. The infected tissues, showed a three fold decrease in reducing sugars. There was also considerable decrease in amylase and invertase activity, the latter possibly due to decrease in reducing sugar. MVG

PEACH

595 KIENINGER (H) and EKSI (A). On the distribution of free aminoacids in peach pulps and commercial peach nectars. *Flussiges Obst.* 46(4); 1979; 124-31 (German)

35 samples of peach pulp, produced in the years 1976, 1977 and 1978, have been analyzed for their free aminoacid contents. Important correlations between most of the aminoacids have been determined; they may serve as criteria of purity. The main aminoacids were aspargine and glutamine, aspartic acid and glutamic acid, serine and alanine. It was found that the distribution of aminoacids was not normal in 12 commercial peach nectars sold in Turkey and Germany. This may have been caused by the addition of a different kind of juice. Moreover, the sum total of all the aminoacids was lower than the lowest value found in peach pulp; this is a consequence of dilution. KMD

APPLE

596 de POIX (A), ROUET-MAYER (MA) and PHILIPPON (J). Combined action of chlorides and ascorbic acid on inhibition of enzymatic browning in mashed apples. *Food Sci + Technol.* 13(2); 1980; 105-10 (French)

Addition of Na or Ca chlorides delays the browning of crushed and apples, and the inhibitory action is due to the chloride anion and not to the Na or Ca cations. Chloride slows down the enzymatic activity, while ascorbic acid merely delays the browning without altering the enzymatic activity. Polyphenoloxidases were not inactivated in these experiments. Hence, one could think of a method for determining an "index for the phenols involved in browning". KMD

PAPAYA

597 MEHTA (GL) and TOMAR (MC). Studies on dehydration of tropical fruits in Uttar Pradesh. III. Papaya (*Carica papaya* L.) *Indian Food Packer.* 34(4); 1980; 12-5

Ripe papaya slices treated with sulphitation in 1000 p.p.m. SO_2 for one hour steeped in 30 Brix sugar syrup with 1000 p.p.m. SO_2 steeped in 50 Brix sugar syrup with 1000 p.p.m. SO_2 and steeped in 70 Brix sugar syrup with 1000 p.p.m. SO_2 for 18 hour were dehydrated in an electric cross-flow drier for 6-10 hour at 100 C. The dehydrated slices were packed in 250 gauge polythene bags, heat sealed and placed inside friction top tins and stored for 12 months. Dehydrated slices prepared from steeping in 70 Brix syrup with 1000 p.p.m. SO_2 gave the best product as assessed by chemical (acidity, 0.36%, reducing sugars 32.70%, total sugars, 72.30%, vitamin C, Nil, carotenoids 1.05 mg/100 g, SO_2 500 p.p.m., moisture, 17.6% and reconstitution ratio. 1:1.18) and organoleptically. Carotenoids retained was about 50% of the initial value (1.05 mg/from 2.0 mg/100 g). BSN

598 PAL (DK), SUBRAMANYAM (MD), DIVAKAR (NG), IYER (CPA) and SELVARAJ (Y). Studies on the physico-chemical composition of fruits of twelve papaya varieties. *J. Food Sci. Technol.* (India) 17(6); 1980; 254-6

12 papaya varieties were examined for physical characters like size, pulp colour, texture and density, fruit and seed cavity, dimensions, and chemical composition like total soluble solids, acidity, DM, alcohol insoluble solids, starch, sucrose, glucose, fructose, minerals and vitamins. The range of values for important constituents are weight 0.48-1.92 kg, pulp 73.0-88.7%, acidity (% citric acid/100 g pulp), 0.058-0.116, vitamin A 1599-6347 i.u.%; vitamin C 46.5 - 125.9 mg%, sucrose 0.48-2.47%, glucose 2.91-5.24% and fructose 2.34-4.19%. KAR

GUAVA

599 BHULLAR (JS) and FARMAHAN (HL). Studies on the ripening and storage behaviour of Safeda guava (*Psidium guajava* L). *Indian Food Packer.* 34(4); 1980; 5-7

The investigation related to the effect on ripening and storage behavior of Safeda guava fruits subjected to different post-harvest treatments (dipping in aqueous solutions of (2-chloroethyl trimethyl ammonium chloride) (CCC) 500 p.p.m. Maleic hydrazide (MH) 500 p.p.m, 2,4-Dichlorophenoxy acetic acid (2,4-D) 100 p.p.m, 2,4-5-Trichlorophenoxy acetic acid (2,4-5 T) 200 p.p.m., wax emulsion 6% and distilled water (control) for one minute) and air dried and on packing in 100 gauge perforated polythene bags with twenty perforation on one side providing 0.52% ventilation and stored for 10 days at room temperature. Based on the data examined for physiological loss in weight % rot, TSS %, acidity, vitamin C and colour development it was observed that with 6% wax emulsion treatment, ripening was retarded and storage life prolonged with minimum physiological loss in weight (8.20%-11.69%) and % fruit rot (5.0% in the range 5.20%). With increase in storage period, titratable acidity (0.486-0.249%) and vitamin C content (200-112.7 mg/100 g) decreased. BSN

600 MEHTA (GL) and TOMAR (MC). Studies on dehydration of tropical fruits in Uttar Pradesh. II. Guava (*Psidium Guajava* L.). *Indian Food Packer.* 34(4); 1980; 8-11

Dehydration of ripe guava slices was done by subjecting the slices to various treatments for 18 hour initially at 100 C sulphitation 1000 p.p.m. (SO_2) alone and along with 0.2% ascorbic acid steeping 30, 50 and 70 Brix sugar syrup alone and containing added 1000 p.p.m. SO_2 with and without 0.2% ascorbic acid and drying treated slices in an electric cross flow drier for 6-10 hour at 60 C depending on the treatment employed. The dehydrated slices were packed in 250 gauge polythene bags and after sealing were placed in friction top tin containers and stored at room temperature for 12 months. As assessed by the chemical ((i) acidity, (ii) reducing sugars, (iii) total sugars, (iv) vitamin C, (v) SO_2 p.p.m., (vi) moisture and (vii) reconstitution ratio) and organoleptic scores, (viii) colour, (ix) flavour, (x) texture, (xi) taste, (xii) over all score. (xiii) over all score for reconstituted slices), dehydrated guava slices steeped earlier in 70 Brix sugar containing 1000 p.p.m. SO_2 was found to be the best. BSN

SUGAR, STARCH AND CONFECTIONERY

SUGAR

601 ABIDIN (I) and MAIER (HG). Simultaneous determination of fructose, glucose and sucrose by the anthrone-reaction. *Chem. Mikrobiol. Technol. Lebensm.* 6(4); 1980; 121-3 (German)

The sum of fructose, glucose, and sucrose (the last calculated as hexose) can be determined by a special modification of there action with anthrone/sulfuric acid. All three sugars exhibit the same molar extinction (related to hexose) at 605 nm. This is also true for sugars bound to fruit acids. The standard deviation lies near ± 0.5 g/ml. The absorption is practically constant within 15 min at room temperature. Free malic, citric and tartaric acid augment this value, if they are present in excess. AA

602 KUSHNIR (I). Sensitive thin layer chromatographic detection of high fructose corn sirup and other adulterants in honey. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 917-20

603 WHITE (JW), KUSHNIR (I) and DONER (LW). Charcoal column thin layer chromatographic method for high fructose corn sirup and spectrophotometric method for hydroxymethylfurfural in honey: collaborative studies. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 921-7

STARCH

604 SEAGER (RH). The use of starch for moulding. *Confect. Prod.* 46(4); 1980; 182-5

Discusses: starch for moulding; moisture binding properties of starch; effect of relative humidity on starch moisture content; product equilibrium relative humidities; starch moisture during setting period; and starch drying. BSN

CONFECTIONERY

605 RIEDEL (HR). Hand made pralines with mechanical assistance. *Confect. Prod.* 46(4); 1980; 164-5, 167

606 TOYAMA (R), SEKIZAWA (N), ARAKAWA (Y) and ISHITANI (T). Storage of high and intermediate moisture confectionaries by using free oxygen absorber. *J. Jpn. Soc. Food Sci. Technol.* 27(5); 1980; 221-6 (Japanese)

To preserve high and intermediate moisture confectionaries, the influence of their initial viable count, moisture content and water activity on shelf life were studied. The application of oxygen absorber for preserving confectionaries were also studied. It was confirmed that three types of commercially available oxygen absorbers had prescribed oxygen absorbing power. A good correlation was found between water activity and moisture content of confectionaries. Mold growth was completely excluded for 5 weeks when stored under the presence of oxygen absorber. Oxygen absorber thus proved to be a good method for prevention of mold growth. In the case absorber was sealed in, formation of carbon dioxide, ethyl alcohol was observed in the confectionaries containing sweet bean paste of relatively high water activity. Yeasts were identified as the major origin. Confectionaries of high water activity were deteriorated by yeast and bacterial growth even under the presence of oxygen absorber, therefore sanitary and microbiological control in the manufacturing process may be necessitated. AA

BAKERY PRODUCTS

607 SEIBEL (W), SEILER (K) and JANCIC (N). Changes in the nutritive value of extrusion products. *Getreide-Mehl Brot.* 33(9); 1979; 240-3 (German)

The hot extrusion as the most recent processing technique in grain processing helps produce stable cereal based foods having the desired nutrient composition. The classical process of bakery technology, the manufacture of bread and fine bakery products have been appropriately supplemented by such products. On the basis of rye whole meal, edible wheat bran, wheat flour and/or tapioca starch and by the addition of milk and/or soya protein, one obtains extrudates richer in protein and/or in ballast (fibre). It would be desirable if such products could replace or supplement other snack (munch) items which are rich in fat and energy. KMD

BREAD

608 FRAZIER (PJ), BRIMBLECOMBE (FA), DANIELS (NWR) and RUSSEL EGGITT (PW). Better bread from wheats: A rheological attack. *Getreide-Mehl. Brot.* 33(10); 1979; 268-71 (German)

Of late, in Great Britain, the breadmaking technology has changed. The process has become shorter and the flour has become weaker. In this text the interaction effect between mechanical work and oxidative improvement in the dough (ascorbic acid, azodicarbonamide and lipoxigenase) has been studied and represented graphically in an excellent manner. For mixing different oxidants into a multi-component baking agent, one needs a fundamental knowledge of the relevant interactions, within the dough, of each individual component. KMD

609 NOUT (MJR) and NOUT-VAN DER HOOFT (CFS). Composite flour bread in Nigeria. 1. Formulation and taste panel evaluation. *Voeding.* 40(10); 1979; 363-6 (Swedish)

Using simple technology various types of composite flour bread were prepared, each having the same protein content as the control (100% wheat). Composite flours were of the 'diluted wheat' type, containing 70% wheat flour, supplemented by starchy flours and protein rich oilseed flours. Using a selected panel of 35 Nigerian tasters, organoleptic assessment was carried out. Partially defatted groundnut flour was preferred as a protein rich flour, while

the composite flour breads containing cassava starch, maize flour, or millet flour received scores which did not differ significantly from those of 100% wheat bread. Yam flour, rice flour, sorghum (guinea corn) flour, or cassava flour in composite flour breads received significantly lower scores than the first mentioned group. AA

610 SEIBEL (W). Results of the 21st quality test and evaluation of bread by the Deutsche Landwirtschafts-Gesellschaft (DLG). *Getreide-Mehl Brot.* 33(10); 1979; 272-7 (German)

NOODLE

611 KUROKOCHI (K), OHINATA (H) and MATSUHASHI (T). Functional properties of 'Sobo-kiri' (Buckwheat Noodle) fabricated with gluten. *J. Jpn. Soc. Food Sci. Technol.* 27(5); 1980; 254-6 (Japanese)

The functional properties of 'Soba-kiri', or buckwheat noodle, were investigated with respect to the added gluten content in the formulated flour as well as the ratio of buckwheat flour versus wheat flour. When gluten was added to the newly formulated flour composed of 90 parts of buckwheat flour and 10 parts of wheat flour at 10% level, its properties such as machinability, required cooking time and loss in cooking water were equivalent to those of the conventional formulated flour of the 50 to 50 ratio. AA

612 NATARAJA MURTHY (T), RATHI (LS), RAO (JKM) and LAKSHMINARAYANA (G). Shelf-life of ready-to-eat fried noodles. *J. Food Sci. Technol.* (India). 17(6); 1980; 281-2

Ready-to-eat extruded noodles (Sev or Murukku prepared by blending corn and soy flours and milk powder) were prepared by frying in (i) groundnut oil and (ii) soy bean oil in 30 t/day continuous plant and the shelf-life was assessed during storage for 70 days at 32-34 C when packed in non-transparent, high density, black plastics containers of 12 kg capacity. No significant changes were observed in free fatty acid content of oil extracted from the noodles during the entire storage period. Peroxide value (m.eq./kg) increased from 4.5-5.8 to 6.6-13.6 and 2.4-30 to 6.7-6.8 in (i) and (ii) respectively. Organoleptic quality was good upto 35 days and 20 days for (i) and (ii) respectively. Adding spices further extended the shelf life by 7 days in (i) and 14 days in (ii). KAR

MILK AND DAIRY PRODUCTS

613 ISHIOKA (Y). The trend of dairy technology under the control of supply and demand in Japan. *J. Jpn. Soc. Food Sci. Technol.*27(5); 1980; 257-64 (Japanese)

614 MURTHY (GK) and PEELER (JT). Rapid methods for differentiating reactivated from residual phosphatase in milk and cream: collaborative study. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 822-7

MILK

615 GILL (DS), AHUJA (SP) and BHATIA (IS). Comparative characterization of membrane-bound and free ATPase from cow and buffalo milk fat globule membranes. *Indian J. Biochem. Biophys.* 17(4); 1980; 282-6

The properties of ATPase from milk fat globule membranes (MFGM) from cow and buffalo milks were compared. Both enzyme preparations were inhibited by higher concentration of ATP. When represented as Edie-Hofstee plot, the enzymes showed biphasic curves indicating that ATPase are not single enzyme entities and one of the components has high affinity for ATP. The ATPase from buffalo MFGM had lower affinity for ATP but was a more potent catalytic agent than the enzyme from cow milk. The effects of varying concentration of $Na^+ + K^+ + Ca^{2+} + Mg^{2+}$ were also investigated. The ATPases from buffalo and cow MFGM were ($K^+ + Ca^{2+} + Mg^{2+}$) ATPase and ($Na^+ + K^+ + Mg^{2+}$) ATPase respectively. The properties of ATPase released from buffalo MFGM were similar to those of membrane bound ATPase. Phospholipids increased the affinity of ATPase for ATP and arrested the temperature dependent inactivation of the same. MVG

616 HANSEN (AP), SWARTZEL (KR) and GIESBRECHT (FG). Effect of temperature and time of processing and storage on consumer acceptability of ultra-high-temperature steam injected whole milk. *J. Dairy Sci.* 63(2); 1980; 187-92

Whole milk (3.25% fat and 12.0% total solids) was processed in an ultra-high-temperature steam injection system. All samples were preheated to 78 C. Process time-temperature relationships included 138, 143 and 149 C for 20.3 s 143 and 149 C for 6.9 s; and 149 C for 3.4 s. The product was stored at 4, 24, and 40 C and evaluated by an untrained taste panel at intervals of 0, 4, 8, 12, 16, 20 and 24 week. Flavour scores for samples stored at 4 C generally increased with time while scores of samples stored at 40 C declined with time. Prediction curves indicated that product flavour scores improved as storage temperature decreased below 12 C for a mean residence time of 3.4 s, below 32.5 C for 20.3 s, and between 12 and 32.5 C for intermediate heat treatments. Acceptable flavour scores for milk stored through 20 week at or near room temperature were produced by ultra-high-temperature steam injection and aseptic packaging. AA

617 HILLERS (JK), NIELSEN (VH), FREEMAN (AE), DOMMERHOLT (J) and DEITER (RE). Value of fat and protein in producer milk. *J. Dairy Sci.* 63(2); 1980; 322-7

The economic value of solids components of milk should be a function of net returns from products in which the milk solids are used. An empirical procedure is illustrated to estimate the value of fat and protein in milk used to manufacture selected dairy products. Manufacturing costs were evaluated and divided into those that remain constant for a volume of milk regardless of solids content and those costs that change with the solids content of milk. Values of a 0.1% increase in the protein content in 100 kg of milk used to manufacture hard cheese, nonfat dry milk, and cottage cheese were $.300. AA

618 HOSKIN (JC) and DIMICK (PS). Evaluation of fluorescent light on flavour and riboflavin content of milk held in gallon returnable containers. *J. Food Prot.* 42(2); 1979; 105-9

Five types of containers, (i) clear polycarbonate, (ii) tinted polycarbonate, (iii) high density polyethylene, (iv) glass and (v) unprinted fibreboard, non-returnable, were evaluated for their protection of homogenized milk against development of light-induced flavour and degradation of riboflavin. The tinted polycarbonate container, which is fabricated with a blocking agent that inhibits transmission of light at 380-480 nm, provided the milk with the greatest protection among the returnable containers. Milk exposed in fibreboard containers and also the milks stored in all five types of containers under darkness, were not significantly different from the unexposed controls. The milks held in glass demonstrated significant losses in riboflavin following exposure. KMD

619 KAMINOGAWA (S), YAMAUCHI (K) and YOON (C). Calcium insensitivity and other properties of α_{s1}-1 casein. *J. Dairy Sci.* 63(2); 1980; 223-7

α_{s1}-1 casein is the large peptide derived from α_{s1}-casein by splitting off the N-terminal peptide (residues 1 to 23) by the action of chymosin. α_{s1}-casein has been in a variety of cheeses and is thought to have a relationship to cheese texture. Properties of α_{s1}-1 and α_{s1}-caseins were compared. No marked differences were found in conformation between α_{s1}-1 and α_{s1}-caseins when analyzed by ultracentrifugation and circular dichroism. Calcium-binding capacities were similar, but α_{s1}-1 casein lacked calcium sensitivity characteristic of α_{s1}-casein. It is suggested that the hydrophobic N-terminal region of α_{s1}-casein plays an important role in its precipitation by calcium^{2+}. AA

620 KUHN (NJ), CARRICK (DT) and WILDE (CJ). Lactose-synthesis: The possibilities of regulation. *J. Dairy Sci.* 63(2); 1980; 328-36

621 PACKARD (VS) and GINN (RE). Need for a working-factor in evaluating freezing point results on raw milk samples. *J. Food Prot.* 42(2); 1979; 110-2

622 RAO (SRM) and BECTOR (BS). A comparative study on the determination of solids-not-fat in milk by calculations. *Indian J. Dairy Sci.* 33(1); 1980; 1-6

The applicability of Richmond's formula (SNF=CLR/4+0.2 F+0.14) using Quevenne specific gravity lactometer, modified Richmond's formula (SNF=0.25L+ 0.2+F0.50) using Zeal specific gravity lactometer and BSI formula (SNF=0.25D+ 0.22F+0.72) using density hydrometer along with fat estimated by Gerber method using 10.75 ml pipette for calculation of solids-not-fat (SNF) were tested by using 86 samples each of cow and buffalo milk. In all the milk samples analysed the calculated values of SNF by the three volumetric methods were both higher and lower than the gravimetric values, indicating that these methods do not give a true estimate of SNF in milk. AA

623 SHARMA (SK) and SINGH (RV). Cost analysis of procurement, reception and chilling of milk. *Indian J. Dairy Sci.* 33(1); 1980; 95-8

The cost of procurement per kg of milk was about 46 paise of which about 67% was on transportation and labour. The cost of reception was about 8 paise/ kg of milk. The plant was exercising economy in the chilling operation and the cost per kg of milk was only about 3 paise. AA

624 SHIPE (WF), SENYK (GF) and FOUNTAIN (KB). Modified copper soap solvent extraction method for measuring free fatty acids in milk. *J. Dairy Sci.* 63(2); 1980; 193-8

A modified copper soap method was developed to provide a sensitive, rapid method for determining the free fatty acids in milk and estimating the intensity of lipolyzed flavour. The modification is simpler and more rapid than the original copper soap method. Only a small sample (0.5 ml) of milk is needed for this colorimetric test, so it would be feasible to take aliquots from a universal sample. The method can be semiautomatic with an automatic sampler and spectrophotometer with a flow-through cell to test up to 200 samples per hour. It would take approximately 2 days to run the equivalent number by the Bureau of Dairy Industry method. AA

625 ZADOW (JG) and HARDHAM (JF). Changes in isoelectric focusing patterns of milk proteins from storage in aqueous urea-mercapthoethanol solution. *J. Dairy Sci.* 63(2); 1980; 199-203

Patterns of isoelectric focusing of β-lactoglobulin, α-lactalbumin, and bovine serum albumin changed when these proteins were stored in aqueous 6M urea solutions containing mercaptoethanol. These changes, which were not detected by electrophoresis, involved progressive loss of some bands observed on focusing of freshly prepared solutions. They occurred rapidly (less than 15 min) at pH 7 and 9 but required 2 to 3 days at pH 5.7. Isoelectric focusing patterns were not altered on storage at pH 5.0 or 2.0, or if the urea concentration was reduced substantially below 6M, or in the absence of mercaptoethanol. The half cystine residues in the proteins were implicated in changes in isoelectric focusing pattern as the changes were not evident. On storage of α_s or β-casein (free of cystine residues) and as reduction and blockage of these residues in β-lactoglobulin rendered the patterns stable on storage. AA

CHANNA

626 JAILKHANI (VK) and DE (S). Utilization of goat milk for channa making. *Indian J. Dairy Sci.* 33(1); 1980; 29-33

A suitable method has been developed for utilizing goat milk for production of channa which could be used for preparation of sandesh of acceptable quality. The average per cent chemical composition of (standardized) channa was: Moisture - 55.37; Fat - 23.52; Protein - 17.26; Lactose - 2.21; and Ash - 1.63. Sandesh had following composition (%): Moisture - 25.53; Fat - 22.93; Protein - 17.03; Lactose - 2.53; Ash - 1.66; and Sucrose - 29.68. Channa exhibited a shelf life of <1 day at 37 ± 1 C and 5 days at 5 ± 1 C. AA

SKIM MILK

627 ARUN (APS), PRASAD (CR), SINHA (BK) and PRASAD (BN). Occurrence of coliform bacteria in skim milk powder. *Indian J. Dairy Sci.* 33(1); 1980; 119-22

Of the 32 strains of coliform bacteria isolated from dried skim milk powder, 20 were identified as *Escherichia coli* while 12 strains were fecal coliform. Samples stored for over 15 days and even upto 6 months did not show the presence of coliforms. Presence of *E. coli* may be due to imperfect sanitation conditions during processing. BSN

628 HURRELL (RF), DEUTSCH (R) and FINOT (PA). Effect of ultra-high-temperature steam injection on sulfur containing amino acids of skim milk. *J. Dairy Sci.* 63(2); 1980; 298-300

Neither methionine and cystine contents nor protein efficiency ratio of raw skim milk were reduced when it was ultra-high-temperature processed for 5 s, 10 s, or 20 s at 150 C. These results contrast with reported losses of 34% for both methionine and cystine but are consistent with rat assays which indicated no reduction in the nutritive value of milk proteins by this process. AA

629 PARKS (OW). Cholesterol esters of skim milk. *J. Dairy Sci.* 63(2); 1980; 295-7

Cholesterol esters in raw skim milk differed in fatty acid composition from their composition in whole milk. The esters, isolated by chloroform-methanol extraction and preparative thin-layer chromatography, are characterized by an octadecadienoic acid content greater than 70 wt %. In all, unsaturated fatty acids contribute 90 wt % of the fatty acids in the cholesterol ester

fraction of skim milk. These results with previous observations suggest that unsaturated lipids may be associated preferentially with the aqueous phase of milk. AA

KHOA

630 RAJORHIA (GS), SRINIVASAN (MR) and CHANDER (H). Distribution of lipolytic bacteria in khoa. *Indian J. Dairy Sci.* 33(1); 1980; 116

Of the 215 colonies isolated from khoa, 158 were of streptococci, 42 of micrococci and 15 of bacilli. Largest clearance zones (15.22 mm) were produced by the bacilli, along with maximum lipase activity (10.13 µmoles of FFA). Minimum lipase activity (4-6 µmoles FFA) and smallest clearance zones were 2-4 nm. BSN

CURD

631 BHATTACHARYA (DC), RAJ (D) and TIWARI (BD). A modified method for the preparation of Bhapa dahi. *Indian J. Dairy Sci.* 33(1); 1980; 38-42

Bhapa dahi was prepared from standardised milk of 4.0 and 7.0% fat mixed with SMP, sugar and starter culture, followed by homogenisation, incubation for 1 to 2 hour and steaming the mixture for an appropriate time. Different factors affecting the quality of Bhapa dahi such as method of preparation, fat level, milk to SMP ratio, sugar concentration; pH and titratable acidity and homogenization were also studied. Milk to SMP ratio of 7:2 and 5:1 were found to be optimal for low fat product and high fat product respectively. Homogenization improved the body and texture of the product. Low fat homogenized product was more acceptable. AA

632 JAIRAM (BT), VIJAYALAKSHMI (BT) and NAIR (PG). Curd tension of milk. *Indian J. Dairy Sci.* 33(1); 1980; 17-20

Average values of curd tension were 53.11 g for Sahiwal, 54.00 g for Tharparkar, 53.51 g, for Red Sindhi and 50.16 g for crossbred cows, and 86.78 g for Murrah and 99.11 for Surti buffaloes. Seasonal effects were significant in all breeds of cattle. Significantly higher values of curd tension were observed during winter. Stage of lactation and pH had significant influence in Murrah buffaloes. Maximum curd tension was observed during third stage of lactation. AA

GHEE

633 CHAKRABORTY (BK). Industrial ghee production trends and innovation. *Indian Dairyman.* 32(10); 1980; 737-42

Technological aspects of ghee (butter oil) making on cottage and industrial scale are considered under the quality of ghee, manufacturing set up, operational problems, types of establishments involved in ghee making and the innovations made in ghee manufacturing process. MVG

634 GABA (KL). Recent trends in rural manufacturing, grading and packing of ghee. *Indian Dairyman.* 32(10); 1980; 783-4

Practices of ghee (butter oil) manufacture at the rural level in certain parts of India and the method of selling are briefly outlined. MVG

635 GOPALA RAO (G). Agmark grades for ghee, certification rules, regional and All India Standards. *Indian Dairyman*. 32(10); 1980; 759-61

The standards prescribed by the Directorate of Marketing and Inspection (Agmark), Indian Standards Institution (ISI), Prevention of Food Adulteration (PFA) Act are briefly discussed. MVG

636 GUPTA (VK), ARORA (KL) and CHAKRABORTY (BK). Ghee from curdled milk. *Indian Dairyman*. 32(10); 1980; 753-7

The importance of preparing ghee from curdled milk under Indian conditions; the process involved in the manufacture of ghee by curdling; recovery of fat; and the quality differences in the ghee obtained have been covered. MVG

637 NARAYANAN (KM). New methods for analysis of ghee and possibility of revising existing standards. *Indian Dairyman*. 32(10); 1980; 777-80

The new methods advocated for determination of ghee (butter oil) quality are off-flavour, colour, texture and purity and the possibility of using them as prescribed standard methods are discussed. MVG

638 PRABHAKAR RAO (M). Packaging and marketing of ghee. *Indian Dairyman*. 32(10); 1980; 785-8

The qualities desired of a packaging material for packing ghee, use of single service containers and tins for packing ghee; and problems of transporting and marketing of ghee have been considered. MVG

639 RAJORHIA (GS). Advances in the preservation of ghee and regional preferences for quality. *Indian Dairyman*. 32(10); 1980; 745-50

The aspects that influence the shelf-life and spoilage of ghee like methods of manufacture; and the antioxidants like phospholipids; synthetic antioxidants; antioxidants from natural sources, chelaters and sequesters; and the regional preferences for ghee quality are covered. MVG

640 RAMA MURTHY (MK). Factors affecting the composition, flavour and textural properties of ghee. *Indian Dairyman*. 32(10); 1980; 765-8

This article reviews the compositional aspect of ghee which includes fatty acid make-up; poly-unsaturated fatty acids; relationship between feed and fatty acids; glycerides; flavour and texture. MVG

641 SINGHAL (OP). Adulterants and methods for detection. *Indian Dairyman*. 32(10); 1980; 771-4

Various oils that could be used for adulteration of ghee, and their methods for detection by opacity test, Bomer value and differential thermal analysis have been covered. MVG

642 WADHWA (B), BINDAL (MP) and JAIN (MK). A comparative study in the lactone profile of fresh and stored ghee prepared from cow and buffalo milk. *Indian J. Dairy Sci.* 33(1); 1980; 21-3

The lactone profile of fresh cow and buffalo ghee has been studied through GLC. The effect of storage of ghee on the lactone profile has also been studied. The levels of gamma lactones (C_{10} and C_{12}) were comparable whereas that of delta lactones (C_{10}, C_{12}) were comparatively lower in fresh cow ghee when compared to those of fresh buffalo ghee. On storage, the gamma lactones showed a decrease of 20 to 28% after 100 days and 48 to 71% after 200 days. The delta lactones, on the other hand, showed marginal increases (2.0 to 12.5%) on storage

of ghee. The variations in the ratios of different lactones can possibly contribute towards off flavour (oxidative rancidity) of ghee. AA

643 ZAIDI (AH), ABICHANDANI (H) and AGRAWALA (SP). Ghee drainage rate through residue cake and its application in the design of filtering centrifuge. *Indian J. Dairy Sci.* 33(1); 1980; 24-8

An equipment has been devised for the collection of drainage rate data, where pressure differential is created by compressed air in place of centrifugal force. The data are collected for pressure differential range of 0.5 to 3.0 atmospheres, and cake thickness was varied from 0.318 to 3.12 cm. The data were found to fit in the following equation, with 97.26% accuracy.

$$Y = 0.0122(X_1)^{-1.6201}(X_2)^{0.4642}$$

Where Y=drainage rate, X_1=cake thickness in cm and X_2=pressure differential in atmospheres. The drainage rate values reported will be of immense use in the design of filtering centrifuge for ghee clarification. AA

WHEY

644 KHANDELWAL (OP) and GUPTA (MP). Thermal denaturation of goat milk whey proteins. *Indian J. Dairy Sci.* 33(1); 1980; 13-6 AA

CHEESE

645 CHRISTEN (GL) and RICHARDSON (GH). Modified Karl Fischer and vacuum oven moisture methods for cheese products. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 828-31

646 ERNSTROM (CA), SUTHERLAND (BJ) and JAMESON (GW). Cheese base for processing. A high yield product from whole milk by ultrafiltration. *J. Dairy Sci.* 63(2): 1980; 228-34

Whole milk of normal pH or acidified to pH 5.7 was concentrated by ultrafiltration to 40% original milk weight, diafiltered at constant volume until a desired ratio of lactose to buffer capacity was established, and concentrate by ultrafiltration to 20% milk weight. The retentates were inoculated with cheese starter and incubated to ferment completely the residual lactose. Precise control of final pH was achieved readily. Fermented retentates were converted to cheese base in a swept surface vacuum pan evaporator. The process gave cheese base yields 16 to 18% greater than could be expected from conventional cheese-making processes. Blends of 80% base curd and 20% aged Cheddar cheese, produced good flavoured process cheese and process cheese food. The body of the process cheese was excessively firm, but that of the process cheese food was satisfactory. AA

ICE CREAM

647 DESAI (HN) and BHANUMURTHI (JL). Physico-chemical changes occuring during storage of dried ice cream mixes made from sub-standard (oxidised) butter oil. *Indian J. Dairy Sci.* 33(1); 1980; 43-50

Studies on the storage stability of the product showed that the dried mixes made from base liquid mixes with normal (10%) or high (12%) fat, with or without BHA as antioxidant and packed under nitrogen or air, and stored at

37 ± 1 C or at room temperature (8 - 30 C) suffered a deterioration in respect of colour, loss of moisture and solubility, liberation of free fat and increase in TBA values with increase in storage time and temperature. Packing the product under nitrogen retarded the rate of deterioration during storage over an air-packed product containing the antioxidant BHA, while without the antioxidant the rate of deterioration was high. The normal-fat dried mixes containing BHA were observed to be acceptable for a period of 4-5 months when bulk packed in polyethylene bags and stored at room temperature (8 - 30 C). AA

648 AGGARWAL (PK) and SRINIVASAN (RA). Mould contamination from dairy and farm environment. *Indian J. Dairy Sci.* 33(1); 1980; 117-9

MEAT AND POULTRY

649 ATTREY (DP) and SHARMA (TR). Methods for the determination of the time course of rigor mortis - A review. *Indian Food Packer.* 34(4); 1980; 39-46

Aspects covered include: principles involved in the determination of rigor mortis; methods of isotonic measurement of rigor; methods of measurement of isometric tension; and periods of development of rigor mortis. BSN

650 BALTES (W) and SOCHTIG (I). Determination of a smoke flavour condensate admixture to sausages by gas chromatography on glass capillary columns. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 17-21 (German)

The possibility of evidence of a smoke flavour condensate admixture to sausages was investigated. Some material from the centres of the sausages were taken and the volatile compounds were separated and determined by gas chromatography on glass capillary columns. Suitable indicator compounds for an admixture of smoke flavour condensates and guajacole and syringole and the 4-methyl and 4-ethyl derivates of both. For limitation values of all compounds recommendations are given. AA

651 GILL (CO) and NEWTON (KG). Development of bacterial spoilage at adipose tissue surfaces of fresh meat. *Appl. Environ. Microbiol.* 39(5); 1980; 1076-7

Bacteria growing on a thin layer of agar over a fresh meat adipose tissue surface (pH > 7.0) utilized glucose preferentially in the beginning and when soon it was over, attached amino acids which in turn resulted in malodorous substances detectable as spoilage odour when the cell density was about 10^6/cm^2. When growth reached a level of $10^8/cm^2$ cell concentration growth ceased due to limitation of the substrate. Bacterial lipolytical activity was not necessary for bacterial spoilage of adipose tissue. BSN

652 GRAY (JI) and RANDALL (GJ). The nitrite/N-nitrosamine problem in meats: An update. *J. Food Prot.* 42(2); 1979; 168-79

653 MADHWARAJ (S), NAIR (KKS), NAIR (PR), KADKOL (SS) and BALIGA (BR). Preservation of salted casings. *J. Food Sci. Technol.* (India). 17(6); 1980; 273-5

Natural sausage casings prepared from the intestines of animals have certain drawbacks which include incomplete removal of slime, dull colour and inadequate salting. Collection of intestines soon after evisceration and stripping in 0.1 N NaOH removes the slime completely and prevents bacterial proliferation and weakening of the casing. Incorporation of sodium sorbate/benzoate (0.10%) and lactic acid (1%) to the equilibrating brine and removal of entrained brine by centrifugation or pressing yielded casings with salt to moisture ratio at saturation. Lactic acid and sorbate/benzoate helped in

extending the storage at room temperature (25-30 C) to 9 months. These prevente and reduced bacterial and mould counts avoiding weakening and discolouration of the casing. This curing procedure does not alter the calibre and use of the casing to fill and process sausages. AA

654 MITRICA (L) and GRANUM (PE). The amylase-producing microflora of semi-preserved canned sausages. Identification of the bacteria and characterization of their amylases. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 4-8

Thirteen strains of amylase-producing bacteria were isolated from semi-preserved canned sausages and their ingredients. All belonged to genus *Bacillu* and could be separated into 4 different groups. Two groups were different strains of *B. subtilis*. Among them, the first one was *B. amyloliquefaciens* while the last one *B. macerans*. The identification of the different bacteria species was supported by disc gel electrophoresis of the supernatant culture fluid, after growth. The amylases were characterized with regard to temperature optimum, pH optimum and thermostability. Although some of the amylases are quite thermostable, starch degradation in semi-preserved foods, may be due to amylase production from outgrowing spores which survived the heat treatment. AA

BEEF

655 OCKERMAN (HW) and ORGANISCIAK (CS). Quality of restructured beef steaks after refrigerated and frozen storage. *J. Food Prot.* 42(2); 1979; 126-30

SHEEP

656 SMITH (A), CALDER (AG), LOUGH (AK) and DUNCAN (WRH). Identification of methy branched fatty acids from the triacylglycerols of subcutaneous adipose tissue of lambs. *Lipids.* 14(12); 1979; 953-60

GOAT

657 NAIK (HS) and MISRA (DS). Effect of tetracyclines and mycostatin on microbial populations of goat meat during storage. *Indian J. Anim. Res.* 14(1); 1980 21-6

Suitability of oxytetracycline, chlor-tetracycline, tetracycline and myco statin in a dip solution to maintain the keeping quality of goat meat at room and refrigeration temperature was investigated. Results indicate that these antibiotics at both temperature act as bacteriostatic. Low temperature are more desirable for treatment as treated with antibiotic along with mycostatin kept-well beyond 10 days. Chlor-tetracycline was more effective than tetracycline and oxytetracycline. MVG

POULTRY

658 ICHHPONANI (JS). Role of poultry concentrates in the development of poultry industry in India. *Poult. Guide.* 17(10); 1980; 37-9

659 RAO (VM). Economic efficiency and institutional finance for poultry enterprise under varying size groups. *Poult. Guide.* 18(1); 1981; 63

660 PANDA (PC). Frozen poultry. *Poult. Guide.* 17(11); 1980; 171-4

The proper methods for the processing and storage of frozen poultry and their products have been presented. The loss of B-vitamins in culled chicken after 8 months of storage at -18 C was 12-42% for thiamine, 3-11% for riboflavin, and 5-10% for niacin; in broilers, the losses were 5-16%, 8-32% and 9-22% respectively. KMD

661 PANDA (PC). Bacteriological quality and shelf life of minced poultry meat. *Indian J. Poult. Sci.* 15(4); 1980; 281-4

During storage at 1.7 ± 1 C for 15 days the mean log counts increased for total aerobs and Psychotrophs, and decreased for coliforms, *E. coli*, *S. aureus* and C. *perfringens*. The odour and appearance of the product did not change and the product was edible as the microbial load was lower than 10^9/g of tissue needed for spoilage. The study indicated the need for keeping a watch on microbiological quality as refrigeration cannot eliminate bacteria already present though it can slow down or arrest rapid multiplication. MVG

662 PATIL KULKARNI (VG). The problem of polychlorinated biphenyls (PCB) in poultry diet. *Poult. Guide.* 17(10); 1980; 33-6

663 YTZHAK DEGANI. Mould problems in poultry feeds. *Poult. Guide.* 17(10); 1980; 89-94

CHICKEN

664 REGENSTEIN (JM) and RANK STAMM (J). Factors affecting the sodium chloride extractability of muscle proteins from chicken breast, trout white and lobster tail muscles. *J. Food Biochem.* 3(4); 1980; 191-204

665 APRAHAMIAN (S), ARSLANIAN (MJ) and STOOPS (JK). Effects of estrogen on fatty acid synthetase in the chicken oviduct and liver. *Lipids.* 14(12); 1979; 1015-20

666 CHANG (C-F) and HAMILTON (PB). Impairment of phagocytosis by heterophils from chickens during ochratoxicosis. *Appl. Environ. Microbiol.* 39(3); 1980; 572-5

The effect of graded concentrations of dietary ochratoxin A (0, 0.5, 1.0, 2.0, 4.0, and 8.0 µg/g of diet) on the in vitro phagocytic, locomotory and bactericidal capacities of heterophils from broiler chickens was investigated. Both the percentage and the mean phagocytic activities were decreased significantly ($P < 0.05$) at 4.0 and 8.0 µg/g. Both directed and undirected locomotion of heterophils was impaired significantly at the same concentrations. A crossover experiment revealed that the reduced percentage of phagocytosis was associated with the heterophil itself and not with a serum factor such as complement. Heterophils from birds that consumed 4.0 µg/g were not impaired in ability to kill engulfed bacteria. AA

667 CHI (MS), MIROCHA (CJ), WEAVER (GA) and KURTZ (HJ). Effect of zearalenone on female white leghorn chickens. *Appl. Environ. Microbiol.* 39(5); 1980; 1026-30

668 REGENSTEIN (JM), GORIMAR (TS) and SHERBON (JW). **Measuring the water holding capacity of natural actomyosin from chicken breast muscle in the presence of pyrophosphate and divalent cations.** *J. Food Biochem.* 3(4); 1980; 205-11

669 REGENSTEIN (JM) and RANK STAMM (J). **A comparison of the water holding capacity of pre- and post-rigor chicken, trout and lobster muscle in the presence of polyphosphates and divalent cations.** *J. Food Biochem.* 3(4); 1980; 223-8

The water holding capacity (WHC) of rainbow trout (*Salmo gairdneri*) white muscle and lobster (*Homarus americanus*) tail muscle did not change from pre- to post-rigor. The trout muscle WHC values were similar to those of post-rigor chicken breast muscle and were not affected by the addition of sodium pyrophosphate (PP_i), Mg, Ca or combinations of these. In contrast, the WHC of lobster muscle was like the WHC of pre-rigor chicken breast muscle. The pre-rigor lobster muscle showed a large increase in WHC values with the addition of pyrophosphate (205% of control) but with the further addition of Mg to the sample the increase was depressed (166% of control). Ca addition to the pyrophosphate sample even more markedly depressed the WHC (90% of control). In both cases, Mg and Ca seemed to have approximately the same effect on WHC whether PP_i was present or not. Kena, on the other hand, increased the WHC of both pre- and post-rigor trout and lobster muscle. Ca seemed to negate the increasing effect Kena had on WHC. Kena plus Mg caused a large increase in the WHC of the pre-rigor lobster muscle; the WHC capacity with Kena alone was 123% of control while the WHC with Kena and Mg was 231% of control. AA

670 REGENSTEIN (JM) and RANK STAMM (J). **The effect of sodium polyphosphates and of divalent cations on the water holding capacity of pre- and post-rigor chicken breast muscle.** *J. Food Biochem.* 3(4); 1980; 213-21

The water holding capacity (WHC) of natural actomyosin (NAM), of both contracted and uncontracted glycerinated myofibrils and of pre- and post-rigor chicken meat was investigated in the presence and/or absence of sodium pyrophosphate (PP_1), Kena, $CaCl_2$ and $MgCl_2$. In these experiments PP_i caused a small decrease in the WHC of NAM which was further decreased either by Ca or even further by Mg. PP_i with or without Ca or Mg had almost no effect on the WHC of glycerinated myofibrils. Pre-rigor meat showed a slight decrease in WHC of PP_i which was further decreased with Mg or even further by Ca. With post-rigor meat the WHC increase with PP_i was decreased by the addition of Mg or even further decreased by the addition of Ca. The actual WHC of pre-rigor meat was almost twice that of post-rigor meat. Once rigor had occurred no major changes in WHC were observed up to 5 days. Kena caused a slight decrease in the WHC of NAM. Using myofibrils and the meat samples, Kena gave an increase in WHC. The addition of Ca and Mg again tended to decrease this WHC. AA

671 RISTIC (M) and SCHON (L). **Changes in the quality of broiler meat as a function of duration of storage before thawing and re-freezing.** *Food Sci + Technol.* 13(2); 1980; 111-3 (German)

Intact broiler carcases were stored for 6,9 and 11 months at -18 C, then thawed for 38 hour at 4 C, dissected, packed and re-frozen as poultry parts (3 hour at -38 C) and then again stored for upto 4 months at -12 C and -18 C respectively. Samples of parts were taken out monthly and assessed using both sensory criteria (juiciness, tenderness, flavour and total impression as also smell, colour and freezer burn) and objective tests (Warner Bratzler, peroxide, and aldehyde values). Thigh meat suffered some loss of quality by 3 months and breast meat by 4 months, after being re-frozen. The peroxide and aldehyde values showed some deterioration of fat 2 months after refreezing. Thus, the acceptable total storage period was 12-14 months. KMD

672 PANDA (PC). Use of various binders on the acceptability of chicken sausage. *Indian Poult. Gaz.* 64(2); 1980; 48-51

Binders such as non-fat dry milk, semolina (suji), corn starch, and pasteurized egg white were added to a standard chicken sausage formulation, at levels of 0, 2.5, 5, 10 and 15%. Sensory tests of the product showed no significant variation in the appearance and tenderness of the products. However, non-fat dry milk powder was found to be superior in improving the flavour and general acceptability of the product. Semolina lowered the juiciness of the product. KMD

QUAIL

673 AHUJA (SD), PRAKASH BABU (M) and AGARWAL (SK). Guide lines for quail production and management. *Poult. Guide.* 17(10); 1980; 27-32

EGG

674 MAHTO (B), SINGH (CSP), MISHRA (HR) and SHARMA (BD). Studies on weight and measurements of eggs in white leghorn birds during advanced stage of lay. *Indian J. Poult. Sci.* 15(4); 1980; 268-70

Eggs from randomly chosen birds from breeding stock selected on the basis of egg production upto 40 days and from culled stock were measured for weight and volume of albumen, yolk and shell. Breadth of eggs from unselected group was significantly more than those from selected group. Albumen, yolk and shell constituted 60.4, 28.9 and 10.5% of the total egg weight in selected group. These values in selected group were not significantly different in unselected group, they being 60.5, 28.8 and 10.6% respectively. Correlations of egg weight with all egg measurements and between egg length and breadth were highly significant. Egg weight was significantly associated with weight of albumen, yolk and shell. KMD

675 RAJA (A). Some quantitative approaches to egg production enterprise. *Poult. Guide.* 18(1); 1981; 60

SEAFOODS

FISH

676 KARNOP (G). Quality and storage behaviour of hot-smoked fishery products. II. Sensorial quality changes, resulting from storage in halibut, bloater and eel. *Dtsch. Lebensmittel-Rundschau.* 76(3); 1980; 75-81

Freshly smoked halibut (29 charges) herring (24 charges) and eel (12 charges) were stored in wooden boxes with or without lids at 6, 12 and 20 C and evaluated by organoleptic testing until they were spoiled. With regard to the preservation of sensorial quality of hot smoked fishery products, it is concluded that they require a refrigeration at 6 to 7 C during distribution. KMD

677 KARNOP (G). Quality and storage behaviour of hot-smoked fishery products. III. Microbiology and the influence of smoking intensity on the durability of halibut, bloater and eel. *Dtsch. Lebensmittel-Rundschau.* 76(4); 1980; 125-34

Freshly smoked Greenland halibut (29 charges), herring (24 charges) and

eel (12 charges) produced by 9 factories were stored in wooden boxes with or without lids at 6, 12 and 20 C and evaluated by total aerobic bacterial counts. Shelf life of halibut almost entirely depends on the bacterial load which doubles, When temperature rises from 6 to 12 C. An increase of the bacterial count by two powers of ten in the freshly smoked product reduces the shelf-life by half or even more. Temperatures below 6-7 C during distribution is necessary for preserving product quality. KMD

678 MAI (J) and KINSELLA (JE). Composition of lipids and proteins of deboned minced and filleted white sucker (*Catostomus commersoni*). *J. Food Biochem.* 3(4); 1980; 229-39

Phospholipids (PL) in higher amounts (534 mg) 100 g as against 370 mg/100 g and higher carbonyl values (0.8 μmoles/g as against 0.61 μmoles/g) were found in mechanically deboned minced sucker (MDMS) as compared to filleted sucker (FS). In fatty acid composition, however, no significant differences were observed. Protein content and amino acid compositions were similar in FS and MDMS. BSN

SALMON

679 NEWTON (RT). Identification of canned salmon species by scale characteristics. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 722-7

KRILL

680 OEHLENSCHLAGER (J). On the distribution of weight, protein and fat between abdomen and cephalothroax of antarctic krill (*Euphausia superba* Dana) specimen with high fat content. *Chem. Microbiol. Technol. Lebensm.* 6(4); 1980; 113-5 (German)

681 STOEPPLER (M) and BRANDT (K). Comparative studies on trace metal levels in marine biota. II. Trace metals in krill, krill products and fish from the antarctic scotia sea. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 95-8

CRUSTACEA

682 RAMADHAS (V) and SUNDARARAJ (V). Instant live food. *Seafood Export J.* 12(9); 1980; 17-9

The possibilities of growing and using the primitive crustacean '*Artemia salina*' - also known as 'brine shrimp' or 'sea monkey' - which can thrive in supersaline waters have been outlined. At present, these peculiar animals appear to be suitable for mariculture, with the objective of producing animal food. KMD

CRAB

683 JEOL (DR) and SANJEEVA RAJ (PJ). Our food-crabs. *Seafood Export J.* 12(8); 1980; 9-16

Fourteen commercially important species of crabs have been listed and their distribution in India reported. Brief notes concerning a few species have been given; the nutritional and medicinal properties of crab meat have been mentioned, and also the properties that make a species desirable for table purposes. KMD

CLAM

684 DELMORE (RP) Jr. and CRISLEY (FD). Thermal resistance of *Vibrio parahaemolyticus* in calm homogenate. *J. Food Prot.* 42(2); 1979; 131-4

PROTEIN FOODS

685 MIURA (Y) and KOMEYASU (M). Analysis of rheological properties of soybean milk by the use of a cone-and-plate viscometer. *J. Jpn. Soc. Food Sci. Technol.* 27(5); 1980; 252-4 (Japanese)

Rheological properties of soybean milk obtained from several tofu plants were examined by the use of a cone-and-plate viscometer. The flow curves of soybean milk exhibited non-Newtonian behaviors and were approximated by pseudoplastic flow expressed as $r = K(D)^n$. The value of flow behavior index, n, was 0.59 to 0.66. AA

686 PATEL (AA), WAGHMARE (WM) and GUPTA (SK). Cultured soymilk and related products. *Indian Food Packer.* 34(4); 1980; 47-56

Aspects covered include: soymilk as a substrate for the growth of lactic cultures; effect of heat treatment; effect of other processing parameters; effect of the presence of fermentable carbohydrate; effect of certain additives; other culturing conditions effecting the growth of lactic cultures in soy milk; quality of cultured soymilk; and growth of aroma bacteria and development of flavour compounds in soymilk. BSN

687 TANIMURA (W), KAMOI (I) and OBARA (T). Distribution of trypsin inhibitors in green soybean (Edamame) during cultivation. *J. Jpn. Soc. Food Sci. Technol.* 27(5); 1980; 245-51 (Japanese)

Trypsin inhibitors activities in green soybean during maturation, soybeans were harvested periodically from the plants cultivated for 111 days to 165 days. TI activity was not observed within 116 days of cultivation. Its activity was found in the soybeans harvested from 123 day-old plants. The maximum TI activity was determined to be 17.9 mg/g of fresh weight and specific activity was 168 in green soybean picked from 137 day-old plants seed length, 1.2-1.4 cm. TI activity in green soybean increased with the growth of seeds: green soybean of seed length 0.8-1.0 cm had only 6.9 mg/g of fresh weight, whereas, that of seeds of 1.0-1.2 cm length was 14.7 mg/g of fresh weight. TI in soybean was fractionated by chromatography on columns of Sephadex G-75 and DEAE cellulose. TI in green soybean of seed length 1.2-1.4 cm was separated into 4.6 TI peaks on Sephadex G-75 and main inhibitors were No. 3 and No. 4 peaks. TI activity ratio of No. 3 and No. 4 to total TI activity increased with cultivation period. TI in green soybean of short length (less than 1.2 cm) was fractionated into six peaks and main inhibitors were also No. 3 and No. 4 peaks. TI of No. 3 and No. 4 peaks obtained by gel-filtration were further fractionated with a DEAE cellulose column. The number of TI peaks in same length seeds tended to decrease with cultivation days. TI in the seeds of same size (1.2-1.4 cm length) picked from 123, 159 and 165 day-old plants had 7,5 and 4 peaks by column chromatography on DEAE cellulose, respectively. Changes of TI activity in green soybean by heating were also investigated. TI activity in green soybean obtained from local market was 19.7 mg/g of fresh weight and decreased slightly to 13 mg/g of fresh weight by the heat treatment at 100 C for 5 min. TI in this heat-treated green soybean was fractionated into 9 peaks on Sephadex G-75. AA

688 SCHUTTE (L). Technological and nutritional aspects in refining processes of soya protein products. *Getreide-Mehl. Brot.* 33(9); 1979; 244-6

From the viewpoint of physiology of nutrition an equilibrium between the uptake of animal and vegetable food products is desirable. An increased use of plant products is recommended. Soyaprotein guarantees optimum protein upta during a balance shift. One can obtain the taste quality and functionality wh is desired in the constituents of this foodstuff by refining soyaprotein. Substitution of animal protein for vegetable protein (e.g. in meat products) is limited by the rules in Federal Republic of Germany. It is however, possible to enrich numerous conventional, vegetable foodstuffs with protein. The advan tages of soyaproteins and the protein enrichment in paste articles, small cakes, chocolates, instant drinks, bread cakes, etc., are discussed with various examples. KMD

689 TANIMURA (W), KAMOI (I) and OBARA (T). Distribution of trypsin inhibitors during processing of soybean sprout. *J. Jpn. Soc. Food Sci. Technol.* 27(5); 1980; 240-4 (Japanese)

Seeds of soybean contain several kinds of trypsin inhibitor (TI). In order to know the periodical changes of TI activity in soybean sprouts during germination, seeds of soybean were germinated or 6 days and TI activity in cotyledon and axis, was determined. TI activity in soybean sprouts was 67.1 mg corresponding to 80-85% of that of soaked soybean. More than 99% of TI activity of soybean sprouts existed in cotlyedon and the rest was contained in axis. TI activity in cotyledon and axis at different stages of germination were determined. It was 70.2 mg in cotyledon and 14.3 mg in axis after 2 days of germination, 64.6 mg and 0.83 mg after 4 days of germination. Cotyledon contained 73.7 mg of its activity but axis did not show any TI activity after 9 days of germination. The activity of TI is expressed as mg of TI on one gram of fresh soybean sprouts. TI in soybean seed and soybean sprouts (cotyle don and axis) was fractionated by gel filtration with Sephadex G-75. TI in soybean seeds and cotyledon was fractionated into 2 peaks. TI in axis after germination for 2 days showed only one peak. However 2 peaks were observed in FI from an axis after germination for 4 days and seemed to be separated from TI of 2 day-old axis. TI peaks obtained by gel filtration were further fractionated by chromatography on a column of DEAE cellulose. Main TI contained 8 peaks. TI in cotyledon soybean sprouts became difficult to be separated clearly due to close distance of each peak with increase of germi nation days. TI in axis was only one peak for 2 days of germination but it become 2 peaks for 4 days. Changes of TI activity in soybean sprouts by heating were studied. TI activity in cotyledon was inactivated completely by treatment with boiling water for 5 min, but TI activity in axis was still remained. AA

FRUIT JUICES AND BEVERAGES

690 EMCH (F). Fruit extraction and continuous fining. *Flussiges obst.* 46(1); 1979; 12-4

A short review on the thermic process of extraction is followed by the display of mass-balances concerning extraction operations under alternating conditions as also a comparison with calculation of press-yields. Advantages and disadvantages of juice production with presses or extracters as well as the various technology of both process-methods come up for discussion. AA

691 GREVE (H) and REHBEIN (J). Experiences with ion-selective electrodes on determination of potassium in fruit juices and soft drinks. *Flussiges obst.* 46(2); 1979; 46-55 (German)

An electrode that selects ions has been used to measure the concentration of potassium in fruit juices, in beverages containing fruit-juices, and in mineral waters; the results have been compared with those obtained by flame photometry. The analytical values obtained were quite accurate and reproducible. The calibrated phase changer ("measuring chain") on M/s Philips had a high measuring constancy. It was not necessary to change the plastic diaphragm used in the electrode for selecting the potassium ions over a period of 9 months. KMD

692 BACK (W). The importance of micro-organisms in the juice producing factory. *Flussiges obst.* 46(4); 1979; 131-5 (German)

The microbiological conditions in a juice producing factory have been summarized. The most important beverage parasites, and their influence on citrus juice, have been briefly discussed. The most frequent sources of infections in the juice producing factory have been shown and effective measures against them discussed. An evaluation of the damage caused to beverages has been undertaken. KMD

693 HSUEH-ERR(C), KEDING (K) and OTTO (K). On the estimation of sodium content in fruit juices. *Flussiges obst.* 46(3); 1979; 82-3

Enzyme preparations are used for the preparation of fruit juices-especially apple juice whereby the sodium content of the juices is likely to rise sharply. Since the use of such preparations is permitted for the production of fruit juices, some legal questions arise as to the admissibility of such juices in commerce; viz; (a) is the sodium content still valid as a quality criteria ? and (b) is there not a need for a legal elucidation on the use of preservatives in enzyme preparations? KMD

694 KORTH (A). Fruit juices 1978 : Matching in a new situation ? *Flussiges obst.* 46(1); 1979; 2-7 (German)

695 KORTH (A). Modification of the EEC regulation on fruit juices and of the German regulations on fruit juices and fruit nectars. *Flussiges obst.* 46(3); 1979; 83-4 (German)

696 LIST (V) and STURZER (K). ATP - International transportation of short shelf-life food, especially concentrated fruit juices. *Flussiges obst.* 46(1); 1979; 22-4

697 PERSCHEID (M) and ZURN (F). The influence of light on the quality of beverages. *Flussiges obst.* 46(4); 1979; 120-4 (German)

Previous experiments with wine have revealed a positive correlation between the transmission spectrum of the bottle glass and the degree of alteration in wine. In this paper, the influence of light on fruit juices has been discussed from the theoretical stand-point, and experiments have been suggested that would be suitable for such a study. Fast and reproducible results could, perhaps, be obtained with a special, xenon-gas-discharge lamp. KMD

698 WALLRAUCH (S). Adulterations of orange and grape juices : Two special cases during 1978 serving as examples. *Flussiges obst.* 46(2); 1979; 39-46 (German)

The proline concentrations of Brazilian orange juices, obtained from the variety "Pera" especially, during 1976/77 and 1977/78 have been reported. Adulteration of the orange juice and use of ethanolamine to simulate a high formal value have been discussed in detail. An orange juice diluted with whey has been briefly mentioned. A grape juice which was prepared purely by chemical synthetic procedures has also been described. KMD

BLACK BERRY

699 BERGMANN (R). On the composition of home-made black elderberry mother juices. *Flussiges obst.* 46(1); 1979; 8-11 (German)

The author has surveyed the analytical values, relating to black elderberry mother juices, that have been reported in recent publications. He has then reported the analytical values he has obtained, using enzymatic procedures, for the glucose, fructose, citric acid, malic acid and isocitric acid contents of black elderberry juice prepared in the laboratory. The concentrations of various aminoacids in the juice have also been reported. The laboratory results have then been used to evaluate commercially prepared mother juices, sugared juices and diluted juices. KMD

GRAPE

700 CLIVER (DO) and KOSTENBADER (KD). Anti-viral effectiveness of grape juice. *J. Food Prot.* 42(2); 1979; 100-4

Grape juice inactivates human enteroviruses *in vitro*. However, the inactivated virus can be reactivated by the contents of the porcine stomach and duodenum which suggests that such viruses could still lead to intestinal infection. Grape-juice-inactivated virus was efficiently reactivated by human blood serum also. KMD

ORANGE

701 Di GIACOMO (A). Tolerances for the standard values of Italian orange juice. *Flussiges obst.* 46(3); 1979; 74-5 (German)

Italy is the only country of the EEC which produces sweet oranges, and the particular variety that comes into question is "Biondo Comune". The chemical composition of this orange has been reported in detail, and the analytical values discussed in the light of the existng EEC standards which have been formulated without taking this variety into account. KMD

702 KOCH (J). Oranges and orange juice. *Flussiges obst.* 46(3); 1979; 71-4 (German)

The author has discussed production of a few species and varieties of oranges in the important citrus producing countries of the world. KMD

APPLE

703 ADAM (R). Influence of hydrogen sulfite on the mould toxin patulin. Part 2: Experiments using apple juice. *Dtsch. Lebensmittel-Rundschau.* 76(4); 1980; 123-5

The patulin content in aqueous solutions with and without hydrogen sulphite changes during storage at room temperature. Patulin content decreases even without sulphitation. In presence of 200 ppm SO_2, the patulin decreased by 50% within 10 days, whereas in presence of 100 ppm SO_2 this took place after 40 days. A 50% decrease of the patulin content within 10 days was also recorded when the apple juice was heated (20 min, 75 C) immediately after sulphitation with 100 ppm SO_2. KMD

COFFEE

704 ANON. ABC of Coffee : Coffee terms. *Indian Coffee.* 44(10); 1980; 213

Definitions of the following coffee terms are given : monsooned coffee, medium stones, medium stick, medium clods, malformed bean, mouldy bean, Malabar, monkey parchment, monstrous beans, mottled, maragogipe, mucilage, musty, mellow, metallic and mild coffee. KMD

705 BHANUMURTHI (JL), MANN (RS) and SRINIVASAN (MR). The physico-chemical changes in 'Coffee Complete' during storage. *Indian J. Dairy Sci.* 33(1); 1980; 34-7

It was observed that at the low temperature storage of 5 - 8 C, the viscosity increased during the first 90 days by 60% of its initial value and no further increase was noticed till the end of the storage period of 540 days. The viscosity was found to be objectionable at the end of 30 days at 37 ± 1 C. The reconstitutability and flavour of the reconstituted product had not registered any perceptible change during the first 30 days of storage at the temperature of 5 - 8 C. Subsequently, the product lost score for reconstitutability and flavour at the rate of 10 points for every 84 and 72-75 days of storage respectively till the product reached the minimum chosen score of 50 points for the product to be acceptable. At the higher storage temperature of 37 ± 1 C, the product lost score rapidly both for reconstitutability and flavour, the rate being 10 points loss for every 7 days. The pH of the product did not change appreciably during storage. From the above studies, it is concluded that 'Coffee Complete; had an acceptable fluidity, reconstitutability and flavour of reconstituted coffee till the end of 540 and 30 days respectively at the two storage temperatures of 5 - 8 C and 37 ± 1 C. AA

706 NEWTON (JM). Spectrophotometric determination of caffeine in coffee products. Collaborative study. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 705-8

COCOA

707 TIMMS (RE). The phase behaviour of mixtures of cocoa butter and milk fat. *Food Sci. + Technol.* 13(2); 1980; 61-5

The low melting fraction of milk fat softens cocoa butter by dissolving it, and this fraction is the main cause of the softness of mixtures of cocoa butter and milk fat. The eutectic interaction between cocoa butter and the middle melting fraction causes some additional softening, especially in mixtures containing more than 30% milk fat. KMD

WINE

708 BEELMAN (RB), McARDLE (FJ) and DUKE (GR). Comparison of *Leuconostoc oenos* strains ML-34 and PSU-1 to induce malo-lactic fermentation in pennsylvania red table wines. *Am. J. Enol. Vitic.* 31(3); 1980; 269-76

709 CAPELLA(P), CARNACINI (AB), RIPONI (C) and AMATI (A). Volatile components of Albana wine. II. Alcohol-free fraction. *Am. J. Enol. Vitic.* 31(3); 1980; 216-8

By partitioning between propylene glycol and trichlorofluoromethane, alcohols of the volatile fraction concentrate of Albana wine were separated. Gc-Ms study of the volatiles from the alcohol-free fraction have shown the presence of thirty seven compounds, of which 32 were esters. BSN

710 CARNACINI (AB), CAPELLA (P), AMATI (A) and PALLOTTA (U). Volatile components of albana wine. III. Carbonyl compounds. *Am. J. Enol. Vitic.* 31(3); 1980; 219-26

Methanol, ethanol, propanol, 2-methyl propanol, pentanal and hexanol and propanone, butanone, 3-hydroxybutanone, and 2-pentanone, were the six aldehydes and ketones were respectively identified from the carbonyl compounds of an Albana wine. BSN

711 McCLOSKEY (LP). Enzymatic assay for malic acid and malo-lactic fermentations. *Am. J. Enol. Vitic.* 31(3); 1980; 212-5

The rapid enzymatic assay technique for estimation of malic acid in grapes and wines, is based on the use of malate dehydrogenase and glutamate oxaloacetate transaminase for accelerating the main enzymic assay reaction catalyzed by malate dehydrogenase. Photometric determination of NADA is conducted at 340 nm. Detection may be completed in 5 minutes when the concentration is upto 4000 mg/L. With a standard deviation of greater than 35 ppm 100% malic acid may be recovered. The results enable calculation of malate levels and thereby monitoring of malo-lactic fermentation. BSN

712 MORET (I), SCARPONI (G), CAPODAGLIO (G), ZANIN (S), CAMAIANI (G) and TONIOLO (A) Analytical parameters in the characterization of three Venetian wines. Application of the statistical linear discriminant analysis. *Am. J. Enol. Vitic.* 31(3); 1980; 245-9

The analytical parameters examined included estimation of Na, K, Ca, Mg, Chloride, pH, total acidity, P, ash content and alkalinity of the ash. Statistical method of linear discriminant analysis was employed for arriving at comparisons. For comparison of threshold values for the three wines (I, II, III) examined, optimal discriminant functions were employed. The probabilities of classification errors have been estimated. For comparison of II and III the combined parameters of Na, K and chloride were achieved. Discriminating test has been found satisfactory. BSN

713 NICKENIG (R) and PFEILSTICKER (K). Investigations on oxidative browning of white wine. Part I. HPLC separation of preparatively obtained wine phenols. *Dtsch. Lebensmittel-Rundschau.* 76(4); 1980; 115-9

According to Rapp, browning of white wine is caused by flavan-3-ole and flavan-3, 4-diole. The browning is proportional to flavanoid content, the concentration of nonflavanoids changes hardly during the browning. The paper describes the methodology of the preparative separation of phenols from wine on Sephadex G 25. Several hydroxycinnamic acid and hydroxybenxoic acid

derivates were identified in white wine. It has thus been possible to detect 3 hydroxycinnamic acid/tartaric acid esters along with 4 hydroxycinnamic acid ethanol esters in wine. KMD

714 PLANE (RA), MATTICK (LR) and WEIRS (LD). An acidity index for the taste of wines. *Am. J. Enol. Vitic.* 31(3); 1980; 265-8

The acid region of wine as assessed by taste panel studies with reconstituted wine and aqueous buffer solutions of acidic tartrate and malate has been found to lie between pH 2.6-4.0 and of total acidity of 0.05N-0.10N. The acid taste has been traced primarily to total or titratable acidity and secondarily pH, while most indirectly, it is influenced by total buffer concentration. An acidity index found for the various results is given as I_a=total acid (g/L)-pH. BSN

715 POWERS (JR), SHIVELY (EA) and NAGEL (CW). Effect of ethephon on colour of pinot noir fruit and wine. *Am. J. Enol. Vitic.* 31(5); 1980; 203-5

Application of 500 ppm ethephon to pinot noir grapes vines at veraison gave 5 and 18% more colour respectively to grapes thali controls during the 1977 and 1978 crops. Must colour increased by 14% in the 1978 crops. Wine prepared from 1977 crop had 60% more colour after 15 months of bottle aging than wine prepared from untreated grapes. However, with 250 and 500 ppm ethepon treatment, total colour of wines from 1978 crop increased by 29 and 47% respectively as compared to wine prepared from untreated grapes. Taste panel, however, assessed wine from 500 ppm treatment as significantly better than from 250 ppm. Ethepon treated grapes. BSN

716 SACHDE (AG), AL-KAISY (AM) and NORRIS (RAK). Chemical composition with relation to quality of some wine brands produced in Iraq. *Am. J. Enol. Vitic.* 31(3); 1980; 254-6

For the twelve wines assayed, the range of values reported were: pH 3.4-4.2; total acidity (as tartaric acid) 0.517-0.981 g/100 ml.; volatile acidity (as acetic acid) 0.095 - 0.504 g/100 ml alcohol, 7.9-14.6% by volume; reducing sugars, 0.118-10.050/ml wines showed high pH, volatile acidity residual sugar, low fixed acidity and total sulphur dioxide. BSN

717 SKIBBE (H). Cider, fruit wines and sparkling fruit wines in 1978. *Flussiges obst.* 46(1); 1979; 7-8 (German)

718 SUBDEN (RE), FAWCETT (WR), NOBLE (AC) and BOULTON (R). Changes in pH resulting from dilution of ameliorated wines for "Pop" wines. *Am. J. Enol. Vitic.* 31(3); 1980; 233-6

Retail pop wines in Ontario can be made by diluting ameliorated wine by 40% with water, thereby reducing the alcoholic content to 7% by volume. Titratable acidity in most high acid wines is reduced in a somewhat linear fashion but pH is decreased until an equal volume of water is added; then additional water increases pH. The initial pH depression is a function of changes in the association constants and concentration effects of the diprotic tartaric and malic acids. BSN

719 TROMBELLA (B) and RIBEIRO (A). Improved gas chromatographic determination of acetic acid in wines. *Am. J. Enol. Vitic.* 31(3); 1980; 294-7

An automated GLC method for estimation of acetic acid in wines, employs a 6' x 2 mm phosphoric acid-treated glass column packed with 60/80 mesh carbopack C, modified with 0.3% carbowax 20 M, and 0.1% H_3PO_4. By dilution of the sample

and use of a glass insert in a low dead volume injector port, accumalation of residues has been eliminated. As an internal standard propionic acid is used and helium carrier gas saturated with formic acid has been employed for improving chromatographic technique. The method is rapid, accurate and precise. The standard error of ± 0.0012 g acetic acid/100 ml wine at the 0.005-0.054 g/100 ml concentration has been observed. BSN

720 WISSEMANN (KW) and LEE (CY). Polyphenoloxidase acitivity during grape maturation and wine production. *Am. J. Enol. Vitic.* 31(3); 1980; 206-11

The study was not able to establish any definite correlations between polyphenoloxidase (PPO) activity and total phenolic content during the ripening period in grapes. Highest PPO activity was observed during crushing of freshly harvested grapes. By the end of final racking, however, the activity had completely stopped. Brown discolouration in wines due to PPO activity could be prevented when prepared with adequate amount of sulphur dioxide. BSN

BEER

721 BENARD (M) and SCRIBAN (R). Recommendations about wort and beer pH measurement. *J. Inst. Brew.* 86(4); 1980; 177

722 BETT (G), GRIMMETT (CM) and LAWS (DRJ). Addition of hop extracts to beer using liquid carbon dioxide. *J. Inst. Brew.* 86(4); 1980; 175-6

The method described is for imparting hop character to beer by preparing hop extract with liquid carbondioxide, avoiding long contact times required for conventional dry hopping technique and further obviated problems due to residual organic solvent or emulsion stabilizers. Such beers were found to have similar flavour as control samples prepared with ethanolic extract of beer. BSN

723 HEALY (P) and ARMITT (J). Bacterial production of lactic acid in sweet worts. *J. Inst. Brew.* 86(4); 1980; 169-70

724 INGLEDEW (WM), SIVASWAMY (G) and BURTON (JD). The API 20E Microtube system for rapid identification of gram negative brewery bacteria. *J. Inst. Brew.* 86(4); 1980; 165-8

725 POSTEL (W) and PRASCH (E). Studies on the migration of coions during electrodialysis of wine. *Z. Lebensmittel-Unters. Forsch.* 169; 1979; 99-105 (German)

726 RISHI (AK), KAPOOR (R), DHAR (PL) and ATAL (CK). Selection of a suitable solvent for preparation of hop extract. *Res. Ind.* 25(11); 1980; 11-2

(i) Petroleum ether (40-60 C), (ii) benzene, (iii) dichloromethane and (iv) chloroform were used as solvents for preparing hop extract from hopcones. Duration of extraction was 8 hour and the yield of alpha acids (26.4-43.6%) was 43.6% for (i), followed by 42.7, 40.7 and 26.4% for (iii), (ii) and (iv) respectively. The recovery of beta acids was however, 25.6% with (ii), while with (i), (iii) and (iv), it was 21.2, 24.76 and 15.7% respectively. Among these (i) gave the best extract. BSN

BRANDY

727 VENKATARAMU (K), PATEL (JD) and SUBBA RAO (MS). Studies on extraction of phenolics of wood by brandy. *Indian Food Packer.* 34(4); 1980; 22-4

Phenolics were extracted from oak (Indian) and teak shavings with different concentration of ethyl alcohol (10, 20, 30, 40, 50, 60, 70, 80 and 90%) at two temperatures (7 C and 10 C). Studies on extraction of phenolics from oak and teak suspended in brandy (60% ethyl alcohol) at room temperature (28-31 C) and by sequential extraction, have shown that an acceptable aromatic flavour develops with oak shavings, while an unacceptable teaky flavour (probably due to high oil content) results from teak wood shavings at the end of 5 days of storage (37.9% mg for oak shavings as against 43.8 mg % phenolics). BSN

OILS AND FATS

728 ANON. Industry scene: Time for self-reliance in edible oil sector. *Oils. Oilseeds J.* 33(3); 1980: 3-4

PEANUT OIL

729 VASUNDHARA (TS) and PARIHAR (DB). Thin-layer chromatographic identification of pyrazines formed from peanut oil - α-aminoacid interactions at elevated temperature. *Food Sci. + Technol.* 13(2); 1980; 78-81

Pyrazines are potential contributors towards the flavour of deep fat fried foods. A dozen pyrazines were formed when peanut oil (400 ml) was heated at frying temperature (200-210 C) with 40 g of simple α-aminoacids like glycine, alanine, phenylalanine and isoleucine. The pyrazines were resolved, purified and isolated by employing TLC. Eleven of them were identified by their distinct UV and IR spectra while one remained unidentified. With Dragendorffs reagent they could be detected and estimated down to 2.5 and 5.0 µg respectively. The microestimation of different pyrazines formed in four model systems has been reported. KMD

PALM OIL

730 DAVIS (JB). Palm oil mill effluent : A review of methods proposed for its treatment. *Trop. Sci.* 20(4); 1978; 233-62

The following methods of treating palm oil mill effluent have been discussed: disposal, either by dilution or incinearation (and "wet oxidation"); methods in which residual oil is recovered; concentration by seepage and/or evaporation on waste land; burial in agricultural land; crop irrigation; feeding to animals; microbiological methods involving anaerobic or aerobic digestion and production of single-cell protein and separation of phases by filtration, settling, or flotation. KMD

RAPESEED OIL

731 ABDEL LATIF (AMM). The factor in rapeseed oil and the factor in the rat. *Voeding.* 40(11); 1979; 385-8 (Swedish)

Though erucic acid must continue to be regarded as a cause of both short-term and long-term cardiac lesions in the rat, it has been shown that there is

a second, endogenous factor in the rat which predisposes the animal to cardiac lesions when long-chain monoenes are present in the diet. The effects of erucic-acid-containing diets may be compounded by the metabolic state of the animal. An increase in the utilization of fat for energy, which is usually associated with an increased mass of the adipose organ, possibly maximises the effect of erucic acid. Hence, in future experiments, it may be necessary to correlate the incidence of lesions, not only with the concentration of erucic acid or any other factor in the diet, but also with the parameters of fat metabolism, such as blood free fatty acids, blood insulin, glucose tolerance, and adipose depot turnover rate. KMD

FAT

732 FIRESTONE (D) and HORWITZ (W). IUPAC gas chromatographic method for determination of fatty acid composition. Collaborative study. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 709-21

733 FRANKEL (EN), NEFF (WE) and BESSLER (TR). Analysis of autoxidized fats by gas chromatography-mass spectrometry. V. Photosensitized oxidation. *Lipids.* 14(12); 1979; 961-7

SPICES AND CONDIMENTS

734 HEIKES (DL) and GRIFFITT (KR). Mass spectrometric identification and gas-liquid chromatographic determination of 2-chloroethyl esters of fatty acids in spices and foods. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 786-91

VINEGAR

735 GUPTA (RC), JAIN (VK) and SHANKER (G). Palm sap as a potential starting material for vinegar production. *Res. Ind.* 25(11); 1980; 5-7

Palm sap (neera) available in large quantities in India contains 10-15% sugar. The sugar present may be converted into alcohol by submerged fermentation first with *Saccharomyces cerevisiae* and subsequently to vinegar by submerged fermentation with *Acetobacter* sp. Yield of vinegar after 96 hour fermentation was 77.40%. Addition of nutrients did not significantly alter acetic acid production. The cost of vinegar/bottle works out to about Rs. 3.50. BSN

PEPPER

736 RAGHUVEER (KG) and ANANTHAKRISHNA (SM). Piperine and related compounds in pepper. I. Search for minor components. *J. Food Sci. Technol.* (India) 17(6); 1980; 268-72

Solvent fractionation, crystallization of pepper oleoresin and pungency evaluation by threshold methods has indicated that mother liquor has compounds other than piperine. Further study with argentation-TLC showed the presence of a compound which has only a fourth of the pungency of piperine. The coloured compounds in a total extract of pepper contribute 3 to 5% to the absorption at 342 nm. It has also been shown that spectrophotometric method could be conveniently used on a single corn of pepper. AA

FOOD STORAGE

737 SANO (M), FURUKAWA (M), KOURAI (M) and TOMITA (I). Flameless atomic absorption spectrophotometric determination of vendex, an organic tin miticide, in apples, oranges and tea leaves. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 764-8

INFESTATION CONTROL AND PESTICIDES

738 HEATH (AB) and BLACK (RR). Investigation and simplification of the sweep co-distillation cleanup pesticide residues in animal fats. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 757-63

739 HSIA (MTS) and BURANT (CF). Preparation and spectral analysis of 3, 3, 4, 4'-tetrachloroazobenzene and the corresponding azoxy and hydrazo analogs. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 746-50

740 MORING (SE) and McCHESNEY (JD). High pressure liquid chromatographic separation of rotenoids from plant extracts. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 774-81

741 SOOD (ML) and DILBER (DS). Vacor - a new rodenticide for the control of rodents: Acceptability to *Rattus rattus* (Linn.) and *Golunda ellioti* (Grady) in laboratory conditions. *Pesticides.* 14(7); 1980; 30-2

Vacor (N-3-Pridylmethyl-N'-P-nitrophenylurea) was applied in the laboratory against *Rattus rattus* (Linn.) and *Golunda ellioti* (Gray). At 2.0, 1.5, 1.0 and 0.5% concentrations, there was 100% mortality while at 0.2% concentration. there was 40% and 60% mortality in *R. rattus* and *G. ellioti* respectively. Mean period of mortality in *R. rattus* was 4.42 ± 0.148 10.04 ± 0.862 11.34 ± 0.738, 12.24 ± 0.673 and 4.80 ± 2.056 hours at 2.0, 1.5, 1.0, 0.5 and 0.2% concentrations respectively while in *G. ellioti* respective period of mortality was 10.04 ± 0.934, 9.41 ± 0.811, 9.12 ± 0.492, 13.50 ± 1.069 and 10.54 ± 2.471 hours. In *R. rattus* average poison consumed varied from 85.0 ± 4.363 mg/kg. at 0.2% to 544.0 ± 2.909 mg/kg. of body weight at 1.5% concentrations while in *G. ellioti* it ranged from 74.86 ± 6.864 mg/kg at 0.2% concentration to 332.4 ± 58.656 mg/kg. of body weight at 1.5% concentration. It has been concluded that 0.5% concentration can be used efficiently as well as economically to kill these rats. A

742 TJAN (GH) and JANSEN (JTA). Gas-liquid chromatographic determination of thiabendazole and methyl 2-benzimidazole carbamate in fruits and crops. *J. Assoc. Off. Anal. Chem.* 62(4); 1979; 769-73

743 VAN TIEL (N). Activities of the FAO/WHO codex alimentarius commission in the field of pesticide residues. *Pesticides.* 14(7); 1980; 10-5

744 VISWESWARIAH (K), MAJUMDER (SK) and SURYANARAYANA RAJU (G). GLC analysis of X-factor, by-product I and by-product II (products obtained in the lindane extraction process from commercial BHC). *Pesticides.* 14(7); 1980; 16-8, 21

GLC studies have shown the presence of ten peaks of X-factor in the lindane isolation process from technical BHC. The new isomer (X) separated clearly in 5% QF, column in between alpha and gamma isomer, while with 5%

OV-17 columns, it merged with gamma isomer and could not be separated. Traces of beta isomer were present in X-factor which affected the growth of rats. Gamma isomer present to the extent of 16-19% resembles closely commercial BHC. By-product I forms 65-70% and constitutes 92% of alpha isomer, traces of gamma and 7.5% beta isomer. By-product II forming only 6-8% consists of 67% alpha, 10-12% of beta and 18-20% of gamma isomers. BSN

BIOCHEMISTRY AND NUTRITION

745 JOSEPH (R), SHANTHA ACHAR, NIRMALA DEVI (P), KOWSER (N) and SREENIVASA MURTHY (V). Studies on glucose-isomerase production by *streptomyces fradiae*: Relationship among growth cycle, xylose utilization and enzyme production. *Indian Food Packer*. 34(4); 1980; 16-21

Under the conditions of cultivation adopted *Streptomyces fradiae* SCF_5 exhibited distinct morphological variations during the growth cycle; highly branched and ramified mycelia alternating with fragmented bacteria-like rods. Maximum rate of glucose-isomerase production was when the culture was 16-24 hour old. During this period where the rate of xylose utilization was maximum, the growth rate was beginning to show a decline. Addition of xylose at this stage of growth instead of in the beginning of fermentation considerably increased the efficacy of xylose, by a 5- to 10- fold, as inducer for glucose-isomerase production in this system. AA

746 LEEGWATER (DC) and TAS (AC). Identification of an enzymic oxidation product of lysinoalanine. *Food Sci. + Technol.*13(2); 1980; 87-91

747 SALIB (AG). Biotin bioassay. *Chem. Mikrobiol. Technol. Lebensm.* 6(4); 1980; 116-20

The biotin content in 10 different types of materials was estimated, using a modified technique of sample preparation in which specific biotin micro-organisms were employed. "Free" and "bound" biotin were first isolated from bacterial cells and then determined. The results obtained by this method compared well with the values obtained by the colorimetric method and those obtained by calculation using radioactive biotin and dethiobiotin. KMD

748 TREVELYAN (WE). Determination of DNA and of other nucleic acid fractions in *Saccharomyces cerevisiae*. *J. Inst. Brew.* 84(4); 1980; 171-3

749 ANON. Vitamin B_{12} for vegetarians and vegans. *Voeding*. 40(12); 1979; 436 (Swedish)

750 BOSMAN (W). Nutrition (i.e. food consumption) in the Netherlands in 1976. *Voeding*. 40(10); 1979; 351-60 (Swedish)

751 CRAMWINCKEL (AB), BOEIJEN (I) and ELVERS (JWH). Nutrition education with the help of the nutrition plank. *Voeding*. 40(10); 1979; 363-6 (Swedish)

752 Den HARTOG (C). Nutrition of the pregnant woman. *Voeding*. 40(9); 1979; 335-45 (Swedish)

753 EDEMA (JMP). An introduction to the series "Nutritional Care and Sociology". *Voeding*. 40(12); 1979; 419 (Swedish)

The series consists of the following 6 papers :

1. KNEGT (Y) : Nutritional care in the perspective of social science - 420-2
2. Van BEEM (A) and FOKKEMA - Van VEEN (R) : Specialist and dietist and their roles in prescribing a diet for heart patients.
3. SWEN (I) and VEERMAN (H) : The consequences of dietary prescriptions.
4. RUTTEN (M.W.Ch.) : System approximation and nutritional care.
5. EDEMA (JMP) : A sociological model of the household and adaptation of nutritional education (or theory)
6. KNEGT (Y) : Relation models in nutritional care.

The last 5 papers will be published in subsequent issues of "*Voeding*". KMD.

754 GROEN (JJ). Significance of nutrition for therapeutic practice in the Netherlands. *Voeding*. 40(9); 1979; 319-28 (Swedish)

755 HAMMINK (J) and VAN STIGT THANS (MJ). Better nutrition or better foods. *Voeding*. 40(10); 1979; 370-7 (Swedish)

756 WOOR (R). Incorporation of dietary cis and trans octadecenoate isomers in the lipid classes of various rat tissues. *Lipids*. 14(12); 1979; 975-82

TOXICOLOGY AND HYGIENE

757 BLASER (P), RAMSTEIN (H), SCHMIDT-LORENZ (W) and SCHLATTER (Ch.). Toxicity and mutagenicity of the xerophilic moulds of the genus *Eurotium* (*Aspergillus glaucus* group). *Food Sci. + Technol.* 13(2); 1980; 66-71 (German)

Xerophilic moulds of the genus *Eurotium* can be regularly isolated from cereals, flour, nuts, legume grains, dried fruits and vegetables, hard cheeses, jams, smoked and pickled sausage and meat products, etc. On examination, it was found that 108 strains belonging to this genus did not produce aflatoxins B1, B2, G1, G2, sterigmatocystin, ochratoxin A, patulin, gliotoxin and xanthocilin X. Extracts made from the culture broths of 25 of these strains showed no toxicity when administered orally to mice at the highest possible dose of 2.5 g/kg. The extract of these fungi was mutagenic to *Salmonella typhimurium* strain TA 1537, after microsomal activation. Anthraquinone derivatives are supposed to be toxic substances produced by these fungi. Because of the absence of oral toxicity, and because they do not produce mycotoxins, fungi of the genus *Eurotium* may be classified as rather harmless saprophytes in foods with low water activity. KMD

758 GOMEZ (RF), GOMBAS (DE) and HERRERO (A). Reversal of radiation-dependent heat sensitization of *Clostridium perfringens* spores. *Appl. Environ. Microbiol.* 39(3); 1980; 525-9

759 GOMEZ (RF), MONTVILLE (T) and BLAIS (K). Toxic effect of cysteine against *Salmonella typhimurium*. *Appl. Environ. Microbiol.* 39(5); 1980; 1081-3

760 MABROUK (SS) and El-SHAYEB (NMA). Comparative study of two screening media for detecting mycotoxins. *Chem. Mikrobiol. Technol. Lebensm.* 6(4); 1980; 106-12

Rice corn steep agar (RCA) was used as a medium for the cultivation. 26 toxigenic strains of *Aspergillus* and *Penicillium* enhanced the formation of aflatoxin and sterigmatocystin by these organisms, while yeast extract sugar (YES) was better suited for the formation of ochratoxin and patulin. The two media proved to be equally good for formation of citrinin. KMD

761 STORMER (FC) and PEDERSEN (JI). Formation of 4-hydroxyochratoxin from ochratoxin A by rat liver microsomes. *Appl. Environ. Microbiol.* 39(5); 1980; 971-5

762 WILLARDSEN (RR), BUSTA (FF) and ALLEN (CE). Growth of *Clostridium perfringens* in three different beef media and fluid thioglycollate medium at static and constantly rising temperatures. *J. Food Prot.* 42(2); 1979; 144-8

763 YOSHIZAWA (T), ONOMOTO (C) and MOROOKA (N). Microbial acetyl conjugation of T-2 toxin and its derivatives. *Appl. Environ. Microbiol.* 39(5); 1980; 962-6

764 BURMEISTER (HR), VESONDER (RF) and KWOLEK (WF). Mouse bioassay for fusarium metabolities : Rejection or acceptance when dissolved in drinking water. *Appl. Environ. Microbiol.* 39(5); 1980; 957-61

765 D'AOUST (JY) and MAISHMENT (C). Preenrichment conditions for effective recovery of *Salmonella* in foods and feed ingredients. *J. Food Prot.* 42(2); 1979; 153-7

766 MARSH (BT). Principles of food inspection. *J. Food Prot.* 42(2); 1979; 180-2

767 TWEDT (RM) and BOUTIN (BK). Potential public health significance of non-*Escherichia coli* coliforms in food. *J. Food Prot.* 42(2); 1979; 161-3

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